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CONTENTS.

Original Communications.

PAGE

Continued Fever, or so-called Typhoid Fever, of the Tropics, or Continued Thermic Fever. By John Guitéras, M. D. ... 145
Cases of Spinal Diseases, with Autopsies. By Prof. H. C. Wood and Dr. F. X. Dercum ... 151
Experimental Investigation of the Reactions of Various Copper Salts with Grape Sugar—Some New and Reliable Tests for Sugar in Urine. By George Hay, M. D. ... 160
Antiseptic Intestinal Medication. By Dr. Dujardin-Beaumetz ... 165
Chlorate of Potassium. By Jos. Xav. Ziteke, M. D. ... 169
New Remedies. By R. H. Culbertson, M. D. ... 172
Therapeutic Indications for the Use of the Pill Irisin Compound. By E. Chenery, M. D. ... 174
Cocaine Hydrochlorate in Otalgia due to Catarrhal Inflammation of the Ear. By Henry Reder, M. D. ... 175
Note on Antipyrine. By John K. Mitchell, M. D. ... 176

Leading Articles.

Caffeine ... 177
Treatment of Rheumatism with Oil of Gaultheria ... 180
Palatable Prescribing ... 181
The Elimination of Caffeine and Theobromine ... 182
The Index Medicus ... 183
A New Remedy for Dyspepsia ... 184

Reports on Therapeutic Progress

Some Valuable Symptoms of Diseases of Children ... 184

PAGE.

A Portable Transfusion Apparatus ... 186
Elimination of Iodide of Potassium by the Urine ... 186
Acetal ... 187
Kumiss Kefir ... 187
Peptonization ... 188
Schischm-Seeds in Ophthalmology ... 189
Disinfectants ... 189
Malarial Hæmaturia Treated with Quinine Subcutaneously ... 189
Amylo-Valerianic Ether ... 190
Kairine as an Antipyretic ... 191
A New Mode of Using an Old Remedy—Chloroform Water ... 191
Thalline, the New Antipyretic ... 192
Novel Remedies in Dysmenorrhœa and Menorrhagia ... 193
Jequirity ... 193
Treatment of Ingrown Toe-Nail ... 194
Cocaine Used in the Vomiting of Pregnancy ... 195
The New Treatment of Gastric Ulcer ... 195
Treatment of Epistaxis ... 196
Acetate of Lead in Hæmoptysis ... 197
On the Dietetic Factor in the Treatment of Angina Pectoris ... 197
Physiological Action of Hydrastis Canadensis ... 198
Facial Neuralgia Treated by Nerve Vibration ... 198
Action of Bromide of Zinc ... 198
Keratin Pills ... 199
Hay-Fever and its Successful Treatment ... 199
Extract of Piscidia ... 199
Bipolar Faradisation of the Uterus ... 200
A Painless Escharotic ... 200
Pseudo-Tabes Caused by Sulphide of Carbon ... 200
The Use of Ergotin in Diseases of the Lung, Especially Pneumonia ... 200

PAGE.

Treatment of Sprains of Joints ... 201
On Life-saving from Drowning, by Self-Inflation ... 201
Destruction of Fœtus by Morphine ... 202
The Treatment of Fracture of the Femur Without Splints ... 202
Urticaria and Hay-Fever ... 203
Carbolic Acid in Purulent Affections of the Conjunctiva and Cornea ... 203
Three New Laxatives: Cascara Sagrada, Euonymin, and Irisin ... 204
The Supposed Action Exerted by the Antagonism Between Acids and Alkalies, in Modifying the Tonicity of the Heart and Arteries ... 204
Atropine in Severe Electric Shock ... 205
Ergot ... 206
The Treatment of Scarlet Fever by Scalded Oat-Meal ... 206
The Use of Jamaica Dogwood in Neuralgia, followed by Uterine Hæmorrhage ... 207
Valoid of Coca ... 207

Reviews ... 207

Correspondence.

Palatable Prescribing ... 212
Effects of an Overdose of Hyoscyamus ... 213
Intra-Uterine Medication ... 214
Muriate of Ammonium in Facial Neuralgia ... 214

Notes and Queries.

Salicylic Paper ... 215
Poisoning by Oil of Tansy ... 215
Glaucoma Produced by Homatropine ... 216
Who Owns a Prescription? ... 216
A Novel Antipyretic Treatment ... 216
A Cure for Hiccough ... 216
An Improved Antiseptic Dressing ... 216

Original Communications.

*CONTINUED FEVER, OR SO-CALLED TYPHOID FEVER, OF THE TROPICS, OR CONTINUED THERMIC FEVER.**

By John Guitéras, M. D.†

GENTLEMEN: I bring before you a characteristic case of typhoid fever. You are doubtless familiar with the clinical history of the disease, and I propose to dwell upon the symptoms only for purposes of comparison with the symptoms met with in the continued fever of the tropics, which is to be the subject of my remarks to-day.

My knowledge of tropical pathology is chiefly based upon an experience of four years in the city of Key West. I cannot, therefore, assert that what I am about to describe prevails throughout the tropics, but I have reason to believe that it does, and that it has failed to receive a separate place in the nosological tables mainly through the all-absorbing influence of malarial doctrines.

There is undoubtedly a peculiar predisposition to fever in the inhabitants of the tropics. The slightest ailments, especially

*A clinical lecture delivered in the Philadelphia Hospital.

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amongst children, are, during the summer months, very frequently complicated by fever. And so apt is this to become a serious complication that a natural horror of the symptom is noticeable amongst the mothers in those countries. The first question put to the physician will be: "Is there any fever, Doctor?" Or, in the higher classes, he is sent for with the message, or received with the information, that the patient "has forty degrees." For nowhere has the use of the thermometer become so generalized as in the tropics. To this may be added that the general aspect of the inhabitants (the negro race excepted) is that of convalescence from prolonged fever. Now this symptom—fever—may become the sole feature of the case—a truly essential fever of long duration, which it becomes necessary to distinguish from typhoid fever, and continued malarial fever. This question of differential diagnosis, of course, only arises in the cases of long duration, and it is to these that I wish more particularly to call your attention to-day. But I desire you to understand from the first that this fever has no definite duration. Some cases terminate quickly in recovery, whilst in others the fever continues for days and weeks without intermission. The latter, though comparatively frequent during the past summer, are nevertheless rare. Still the fact remains that the popular mind is cognizant of the existence of a long-continued fever. In Cuba they call it *tifo*, and I believe that physicians generally consider it a form of continued malarial fever. In Key West they call it typhoid fever, and the physicians accept the appellation simply because it is the only one that will explain the continuity of the fever in a manner satisfactory to the public.

The shorter fevers we shall dismiss with the statement that they cannot at present be distinguished from febricula or simple continued fever, and, in fact, they correspond with cases of this kind described by tropical physicians under the name of ardent fever.

Returning now to the cases of the long-continued variety, I shall endeavor first to show the points wherein they differ from typhoid fever. Typhoid fever is found, in America, at least, with diminishing frequency as we descend toward the tropics. Its existence in these regions has even been denied. I can assert, however, that there have been, of late years, several epidemics in the city of Havana. (Since the delivery of this lecture I have been shown, by my friend Dr. Wall, of Tampa, the specimens from a case of typhoid fever which occurred in the city of Florida last summer. It is the Doctor's opinion that the case was not an isolated one.) It is very probable, therefore, that the open habitations, and free exposure to the air of the excreta, together with the scattered distribution of the population of tropical and sub-tropical America, have more to do with the infrequency of the disease than any direct climatic or telluric influence. It is, therefore, possible that cases of typhoid fever may originate in the Key West, but I have never seen a case. I have had two patients with typhoid fever in the hospital, but they had contracted the disease in some northern port, and, I may add, that the course of the fever was not in the least modified.

You have been taught that the outbreaks of typhoid are generally circumscribed to houses or groups of houses, and that they are traceable to contamination of the air or the water supply. The epidemics in Havana have been governed by these same laws of propagation. The cases which occurred in Tampa last year were all traceable to the drinking of well-water. There was no such common factor in the ætiology of our cases in Key West. The water used by the majority of our patients was cistern water. They were frequently moved from one dwelling to another, without ever starting new foci of infection. All the cases, with one single exception, were isolated, and they occurred in every section of the city. The exception was met with in a family consisting of the mother and five daughters. Only two of the latter escaped. But in the immediate neighborhood, amongst persons who used the same water, and who actually lived in the same house waiting upon the sick, not one was affected. These cases were moved to another house, with the following results: continued convalescence of the mother after fifty-four days of fever; improvement and recovery of two of the daughters, one with fever of two week's duration, and the other four. The third daughter was one of the few fatal cases. The one factor common to this family, and to most of the severe cases of the fever, was that they were sickly, overworked factory hands, living in hot houses, frequently exposed to the sun, or persons in some way especially subject to the exhausting influences of the summer. Hardy laborers, however, who were much exposed to direct solar heat, were not prone to contract the disease.

One other factor common to the majority

of these cases was the previous existence of some slight ailment, such as bronchial or intestinal catarrh, the disturbances of dentition, worms, sore throat, or a light attack of intermittent fever contracted outside of the island. It is comparatively common there to meet with eclampsia occurring in the course of these trivial disturbances in children. The convulsions are preceded by a sudden and great elevation of the temperature, often terminating fatally in twenty-four or forty-eight hours.

Let us pass on now to a consideration of the season of the year in which these cases prevail. The case before you is not the only one of typhoid now in the wards of the hospital. The latter disease prevails during the autumn months, and continues through the winter. Our tropical fever prevails in Key West during the summer, and more surely even than yellow fever, it vanishes with the first norther, after reaching its maximum towards the end of the summer.

In connection with the unusual manifestations of the fever during the past season, I have examined the meteorological records of the Key West Signal Service station, and I find, for the previous year, an incomparable deficiency in the rain-fall, and in the force and frequency of the prevailing winds.

Passing with a mere mention over the fact that the disease occurs at all ages, but more particularly amongst children, we shall now consider the course of the fever. The diagram upon the blackboard will remind you of the gradual rise of the temperature in the invasion of typhoid fever. In our cases, on the other hand, the temperature was often as high on the first day, as on any subsequent occasion. The slight indisposition which has been previously mentioned as a prodromal symptom, followed its usual course, with or without fever, and suddenly, as a rule in the evening, the temperature rose to 103° Fahr. or more. Or, less frequently the patient was surprised in the midst of health by a severe chill with great elevation of the temperature. After this, in both cases, the course of the fever was extremely irregular, and indefinite as to duration. There was almost always a morning remission, which was often more accentuated than in typhoid. The diurnal fall of the temperature commenced, as a rule, earlier in the evening than it does in the latter disease. But there were also periods during which the remissions were scarcely noticeable. These consisted of stages of very high or comparatively low temperature. The temperature may rise to 105° or 106° Fahr., and in fatal cases, when the cold baths were not employed, the hyperpyrexia was very persistent. The defervescence was gradual, as in typhoid, and characterized by marked morning remissions. In many cases the fever was much more moderate. In such cases the temperature never rose to 103° Fahr., but still followed the same course described above.

As to the pulse, I observed that in vigorous persons it was apt to be slower (often not above one hundred) than you would expect to find in a continued fever of long duration. But in the frail and sickly, the frequent and weak pulse of cardiac exhaustion was found early in the disease.

The special symptoms of typhoid fever were not present. There was no eruption except that of miliaria in one case, and no petechiæ. There was no tenderness in the right iliac fossa, and very seldom any gurgling. The latter symptom, occasionally, and a slight tympanitis and diarrhœa, frequently, were present in the cases which had been preceded by intestinal catarrh. In one fatal case, however, in which large doses of quinine had been administered, I saw the diarrhœa persist, and the stools become sanguinolent towards the end of a persistent hyperpyrexia. Of the majority of prolonged cases it may be said that there was a tendency to constipation in the earlier, and to diarrhœa in the latter half of the disease.

The tongue was moist, as a rule, and its coating light and creamy, with a clear streak along the edges and median line. This condition persisted even in advanced stages of the disease, and was only supplanted by the tongue of the typhoid state in fatal cases when dissolution was approaching.

The cerebral symptoms were such as to constitute of themselves a sufficient basis for the differential diagnosis from typhoid fever. Three of the cases which terminated fatally in the first two weeks showed, from the very start, together with a high temperature, symptoms of great cortical excitement, amounting to violent delirium, such as has been described in the ardent fever of the tropics. But in the cases of long duration the cerebral symptoms were absent to a marked degree. These patients were all very alert, and evinced great interest in their condition and anxiety concerning the gravity and duration of the disease. It was with difficulty that one of these patients in the third week of a continued

fever, which frequently rose in the evenings above 103° Fahr., could be restrained from reading. The appetite was not impaired as a rule. Though exhaustion, I am convinced, would have prevented any sustained muscular or mental effort, yet the patients were far from believing that such was the case. At nights, if the attention was not fixed, the mind was sometimes liable to wander. The only well-marked cerebral symptom, it may be said, was persistent wakefulness, a symptom of which the patients were cognizant, and for which they frequently demanded relief.

The muscular function was far more impaired than the cerebral. The speech was tremulous, the sound of the voice changed, and though there was no subsultus, there was considerable want of co-ordination and tremor of the extremities.

No careful examination was made of the urine, except to determine that there was no albumen.

There were no special complications. In their stead I shall simply detail for you the grave symptoms which occurred in the four fatal cases which were seen by myself. In two of these, death occurred in the second week with hyperpyrexia, and the cerebral excitement already referred to. The third case was one of acute insolation of the cerebro-spinal variety, terminating with symptoms of paralysis after three days of the wildest excitement. The fourth case belonged to the long-continued variety. Death occurred in the thirty-second day of the fever, in a condition of adynamia which developed during the last three days of the disease. In this last stage, the urine and fæces were voided involuntarily, and they both showed a uniform reddish discoloration.

I shall now pass on to consider the reasons for separating these cases from the malarial group of fevers. You probably believe that periodicity is an essential feature of the malarial fevers. But, gentlemen, let me tell you that you will not have practiced long in a malarial locality before you meet with cases of continued fever which can only be explained by malarial poisoning. And you will also find from experience, and from the literature of the subject, that these continued malarial fevers prevail more particularly during the summer months: a fact which increases the liability to confusion with our thermic fever, to the extent that, when both ætiological factors exist in the same locality, there must be serious difficulty in making a differential diagnosis. A proof of the difficulties that surround the diagnosis of continued malarial fevers is found in the too general adoption of the term invented by Woodward, of typho-malarial fever. This term should share the same fate with the proposed *regnum protisticum* of some naturalists, a form of classification which has failed to accomplish anything, except to render more apparent the difficulties that surround the problem of differentiation between an animal and vegetable organism.

During a short residence in St. Louis, Mo., I was shown a good many cases of the so-called typho-malarial fever. Not being satisfied with the diagnosis, it seemed to me that I always gave rise to considerable trouble amongst my friends, by putting the question whether there was or was not any typhoid intestinal lesion in the case. If there was, I considered the diagnosis as settled, and we could then pass on to consider if there was or was not any malarial complication.

To return now to our cases. Key West is not a malarial locality. "By a malarial region," says Woodward, "I mean simply a region in which ague and remittent fevers are the common endemic diseases." The only cases of intermittent fever, thus far, treated in Key West, came from the main-land of Florida or from Cuba. Now, where there are no intermittents in the spring and fall of the year, you should not look for continued malarial fevers in the summer.

There are other grounds besides the ætiological upon which to base the differential diagnosis from malarial fevers. In the latter you find almost always the element of periodicity cropping out somewhere in the course of the disease. They begin or terminate under the assumption of an intermittent form; and they often leave behind them evidence of the malarial cachexy. Nothing of the kind is found in the history of our cases; nor did I ever meet with the gastro-hepatic disturbances which are so frequent in remittent fever. The convalescence was always, though rather slow, complete and uncomplicated.

Finally, the two following points are of the greatest importance in eliminating the possibility of malarial poisoning, to wit: that the spleen was never enlarged, and that the fever was never influenced by anti-periodic doses of quinine. As regards the latter fact, you should know that even in malarial fevers the quinine occasionally fails, but only as an ex-

ception. In our cases it was the rule without one single exception.

Before concluding with this subject I have to state that I examined the blood of these patients microscopically, and found in it nothing abnormal. The same may be said of several cases of *Chagres fever* (malarial) which I had under my care at the same time.

Gentlemen, the treatment that I exclusively followed in the cases under my charge, with constant success, was an antipyretic treatment. I saw no complications to treat, I saw no evidences of blood-poisoning, and I treated the fever. I do not know if I have the ability to prove to you that my opinion concerning the nature of this point is the correct one. My time, and, I fear, our understanding of the heat functions of the body are too limited. Clinically I believe these cases to belong to a distinct species of fever. Similar cases have been described by French authors on tropical diseases under the name of *fièvre inflammatoire*. But I believe the pathogenesis of the fever has been misunderstood. Whatever the nervous mechanism may be that inhibits the heat production of the body, it certainly is overtasked during the long summer of the tropics. The activity of the skin and the constant movement of the air may favor heat elimination; but a season like the one we have just passed through in KeyWest must throw an extra strain upon the heat inhibitory apparatus. The heat is not excessive in Key West; the temperature never rising above 90° Fahr. in the shade. Therefore, I take it, it is that cases of sudden paralysis of this apparatus, causing acute hyperpyrexia, are rare. But if not excessive, the heat is prolonged. In vigorous persons who are often exposed to the direct heat of the sun, I believe that the inhibitory apparatus is kept in healthful vigorous training by the habitual demands made on its functional activity. But in the sickly and overworked, it is my opinion that an exhaustion of these controlling centres is brought about, which gives rise to the fever. Hence it is that I have designated these cases by the name of thermic fever, proposed by H. C. Wood for the acute variety of the affection.

I cannot claim that the treatment based on this reasoning had any influence upon the duration of the disease, but it removed imminent danger, and gave comfort to my patients, thereby saving life.

To speak of the saline laxatives, and the fever mixtures, and the cooling drinks (I generally used cream of tartar with plenty of water), and of the tentative anti-periodic doses of quinine given in the early stages, is to tell you what you would probably do in similar cases, and of what I did, without positive proof that it had anything whatever to do, either with the early termination of some cases, or the prolonged duration of others. The drinking of iced water, milk and lemonade was always agreeable to the patients.

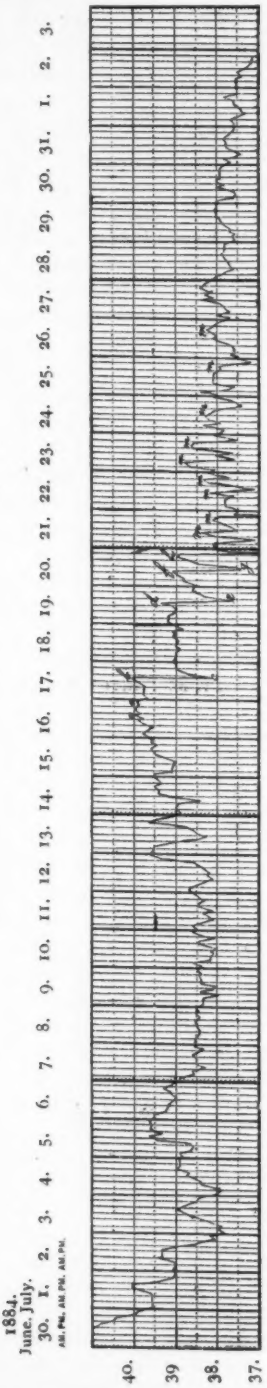
I believe that all the cases that terminated fatally took aconite in the first days of the disease, and I am therefore pleased that my fear of the depressing action of this drug in the treatment of fevers, prevented me from using it in any of my own cases. Unfortunately aconite seems to have no unfavorable effect in cases of simple continued fever of short duration, and the prompt recovery of such cases is ascribed to the use of the drug. But I never saw it administered under critical circumstances, when life was really in danger from fever, because the same physicians who hold the drug to be so valuable, are afraid to give it under these circumstances. Therefore I have not been convinced of its utility, nor do I understand its popularity in the tropics.

Ipecac was given in many cases, for the reason that it acts favorably in true malarial fevers as a preparatory step for the administration of quinine. Much of what I have said of aconite applies also to this treatment. And I may add that two of the fatal cases took emetics of ipecac early in the disease.

I used quinine and digitalis extensively, and alcohol in some cases. The two latter as stimulants to the circulation when required, and the former as an anti-pyretic in the earlier stages, and, if it was impossible to obtain consent to the use of the cold bath, the quinine was used throughout the attack. With repeated doses of six grains a reduction of one degree, seldom more, was generally obtained; but the reduction was not permanent, and, above all, the condition of the patients was not satisfactory. They complained a good deal of the symptoms of cinchonism, and after all, there was no marked improvement. Still when nothing better can be done, I would recommend the administration of twelve or eighteen grains of quinine during the remission for several days in succession, with the hope, often realized, of influencing favorably the evening exacerbations. It is but fair to state, however, that the drug was freely given (more so than I have just recommended) in three of the fatal cases.

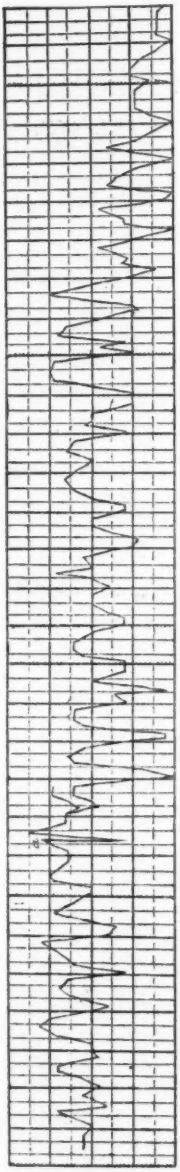
The effect of the cold bath when properly

administered was indeed marvelous. The relief produced was great, and the patients insisted upon its frequent repetition. The result of the bath was invariably an immediate lowering of the temperature, a reduction of the rate of pulse and respiration, and a refreshing sleep. After the second or third bath the course of the temperature



a Sponge bath.—*b* Pulse, 136. Resp., 45. Bath, 40 minutes.—*c* Pulse, 105. Resp., 38.—*d* Pulse, 126. Resp., 60. Bath, 55 minutes.—*e* Pulse, 113. Resp., 32.—*f* Pulse, 125. Resp., 45.—Bath, 35 minutes.—*g* Pulse, 105. Resp., 36.—*h* Pulse, 117. Bath, 25 minutes.—*k* Pulse, 99.—*m* Baths of 20 to 30 minutes' duration, except the two last, which were much shorter.

Case I.—Showing temperature every two hours. The even hours are marked in the *middle* of the spaces, and *upon* the line.



a Bath, 35 minutes, followed by a chill.

Case II.—Showing temperature at 6 and 10 A. M., and 2, 6 and 10 P. M.

seemed permanently influenced for the better, and the general condition of the patient was much improved. It was never necessary to give the baths oftener than twice in the twenty-four hours. But it was necessary for the comfort of the patient to continue them for many days, though the temperature did not rise above 102°, and the dangerous symptoms had disappeared. It is very probable that the baths were necessary for the maintenance of this favorable condition. My remarks about cold baths, apply only to adults. I am still in doubt about their advisability in young children.

The bath was given in the following manner: A long bath-tub was brought to the bedside. The patient, wrapped in a dry sheet, was lowered into water at a temperature between 80° and 85° F. I began at once to remove this water rapidly, replacing it with other water which had a temperature of about 80° F., but which I soon began to cool with ice, until towards the end large pieces of ice were introduced into the bath-tub, where they melted rapidly. The immersion lasted from fifteen to fifty-five minutes. In this I was guided by the thermometer in the mouth, and by the sensations of the patient. Towards the end they complained some of the cold, but I was never obliged to discontinue the bath before obtaining a marked reduction of the temperature. Now the sheet was removed, a blanket was thrown over the patient as he was being lifted from the tub, and a hasty attempt was made to dry the skin. He was then placed upon the bed, the blanket was removed, and the body rapidly covered with another one which had been previously spread upon the bed. The head was wrapped in a towel, and the patient allowed to rest until he felt warm. He generally slept for about half an hour, when the blanket was replaced by ordinary clothing.

I shall now close, giving you a few practical directions for your guidance in the administration of these baths:

Give always a moderate dose of whiskey, with thirty minims of the tincture of digitalis, ten minutes before each bath.

Avoid, above all things, currents of air blowing upon the patient. For this reason the bath should not be given in a large room. In the large ward of the Key West Hospital, the baths invariably produced a chill. The smaller and hotter the room, and the more the assistants perspire during the operation, the better for the patient.

Keep every portion of the body constantly wet. Pour constantly, but gently, over the head and chest, water which should be slightly cooler than that of the bath. This may be done by filling cans partly from the tub and partly from the incoming colder water.

Have always the same assistants, because they soon become trained to do everything steadily, and slowly without loss of time.

Agitate the patient as little as possible, but try to be cheerful during the bath.

The above lecture was delivered last November, at the request of Dr. H. C. Wood, and is now rather hastily written for publication. A more lengthy and detailed account of these cases will be given, at some future time, in the Annual Report of the Surgeon-General of the Marine Hospital Service.

I append the temperature charts of two cases:

Case I.—Mrs. U—. developed suddenly this fever whilst living in an intensely hot house, and after suffering for some days with intermittent fever contracted in Cuba. When I commenced the cold baths in this case, I had very little hopes of her recovery. The ataxic symptoms which were becoming very intense, began rapidly to disappear after the second bath.

Case II.—An artillery man from the U. S. S. Galena, which lay at anchor all summer in the harbor. He was taken sick suddenly with a chill, followed by the fever recorded in the chart. The bath given in the ward of the hospital induced a severe chill, and I abandoned the treatment since there were no urgent symptoms, and a favorable impression seemed to have been made on the course of the disease.

CASES OF SPINAL DISEASES, WITH AUTOPSIES.

REPORTED BY PROF. H. C. WOOD,* AND DR. F. X. DERCUM.†

THE following cases of organic disease of the spinal cord have seemed to us worthy of being put upon record on account of the diagnostic and pathological interest which attaches to them. It is perhaps proper to state that the microscopic preparations were made by Dr. Dercum, but that the study of

* Neurologist to the Philadelphia Hospital; Consulting Physician to the Philadelphia Hospital for the Insane; Professor of Nervous Diseases, University Hospital, etc.

† Chief of Nervous Clinic, University Hospital.

these preparations has been carried out conjointly, and that we are equally responsible for their accuracy.

CASE I.—IRREGULARLY DISSEMINATED SCLEROSIS OF THE SPINAL CORD WITH PREDOMINANCE OF DISEASE IN THE LATERAL COLUMNS.

E. B., aged 31, a native of Switzerland, entered the Philadelphia Hospital October 7, 1881. He gave the following history: He was a baker by trade; he had contracted gonorrhœa in 1870, but denied syphilitic infection. In 1878 his legs began to fail in power, with a distinct feeling of weakness in the muscles. After some months he had sensations as though a tight cord was drawn around around each leg in the neighborhood of the knee. These symptoms gradually increased. He affirmed positively that he had never had any pains or cramps, or startings of the legs at night.

Upon entering the ward his condition was as follows: Apparently in good health; well nourished and free from all evidences of disease save in his legs. Legs well shaped, muscles large and very firm. The ham string and heel tendons rigidly tight. When sitting he was unable to cross his legs without the aid of his hands, but could extend the leg out almost to horizontal line; when, however, the leg was completely elevated by the hand and stretched out, it remained so for a considerable time and much force was required to flex it back to the normal sitting posture. It was found almost impossible to flex the foot on account of the gastrocnemius contraction, but no distinct ankle clonus could be developed. The patella reflexes were greatly exaggerated ; the cremaster reflexes weak. The æsthesiometer points were separated by the legs and feet at two inches; the muscles responded well to faradic currents.

The patient was able to rise from the chair easily but tremblingly, and could only walk by means of a stick, and taking very short steps. He was treated with tonics, alteratives and the actual cautery; and left the hospital after some months improved.

December 27th, 1883, E. B. re-entered the ward suffering from pulmonic hæmorrhage. When he was in bed his legs and feet were rigidly extended in close contact and adducted so that the toes crowded one another. Great force was required to flex the leg but no pain was produced. When the leg was raised so that the knee was eight inches from the bed ten seconds were required for it to fall to its normal position. The patella reflexes were greatly exaggerated. The æsthesiometer points were separated on top of the feet at 1½ inches. There were no contractions other than those noted. He could usually stand alone but the head and body were thrown greatly forward. Most of the time the rigidity of the legs entirely prevented walking. When he walked he did so with the head and trunk bent far forward and kept from falling by two canes put well forward and with their ends widely apart. Raising the heel first from the ground, swinging his body and raising his pelvis, by an effort he got the toes loose from the ground so that he could push or slide the feet forward; the step being only from three to seven inches in length. During walking he did not tremble, but he said that he trembled when he was cold. There was no palsy of the bladder, but when the desire was felt he had to relieve himself at once. No pain or symptoms other than those detailed were present save such as were connected with his lungs.

The nervous symptoms in this case did not change, and the man died March 12th of acute pulmonary consumption.

AUTOPSY.

Cervical Cord.—Dense masses of sclerosed tissue were found occupying to a greater or less extent the position of the lateral columns. In the middle portion of the cervical enlargement the sections showed the lateral column of the left side to be *entirely* replaced by connective tissue, though upon the right side the lesion was by no means so extensive. In the posterior columns a smaller rounded area of sclerosis was found on either side of the posterior median fissure, the lesion being more marked upon the left side and so situated as to involve the columns of Goll much more decidedly than the posterior root-zones.

Different levels of the cervical cord revealed essentially the same lesions.

Dorsal Cord.—The examination disclosed entire and pronounced sclerosis of the posterior columns of both sides. So decided was this lesion that the shape and bulk of the cord were materially modified, the latter being somewhat diminished. The lateral columns were much less affected than in the cervical cord though the lesion that did exist was most marked upon the left side, if not confined to it.

Lumbar Cord.—Here an area of pronounced sclerosis was found on either side of the anterior median fissure, while the left lateral col-

umn showed evidence of the same lesion, though to a much smaller extent than in other portions of the cord.

Careful and detailed studies of the *sciatic nerves* yielded negative results. Nothing abnormal could be found in them.

Case II.—Multiple Cerebro-Spinal Sclerosis.

A man aged about 60 years, entered the Philadelphia Hospital (Jan. 31, 1884), complaining of progressive loss of power in all four extremities, with some stiffness and tremor. He stated that these symptoms had developed very slowly, and otherwise that his health was good. He denied that there was any loss of memory or mental failure, and under observation it was not made out that intellection had diminished. He did not suffer pain. The tremors were never present when the man was quiet but when any voluntary motion was attempted they commenced at once in the part moved and became very violent, spreading to all portions of the body and becoming so excessive as to arrest all action. He was suddenly seized with an apoplexy with ordinary symptoms and died without recovering consciousness.

AUTOPSY.

Right cerebral hemisphere and spinal cord alone examined. A large clot in external capsule between island of Reil and the corpus striatum. Microscopic sections were prepared of all portions of the neighborhood, the corpus striatum and optic thalamus, also above these through the cortex. Scattered without discernible regularity of distribution through these regions were patches of various size of distinctly sclerosed tissue, with very marked multiplication of neuroglia: these patches had abrupt margins, but in the the case of the larger sclerotic masses there were lying near the edge of the large patches more or less numerous small sclerosed spots. These foci of disease occurred in the white matter as well as in the cortex and in the ganglia. In the *spinal cord* the sclerosis existed in the whole length. In all the sections examined the central canal was obliterated and surrounded by densely packed neurogliar cells making a column of sclerotic tissue. Sclerotic patches of typical formation were found in various places in various sections: in one section the posterior fissure was entirely obliterated by a sclerosed patch into which the posterior columns were fused.

REMARKS.

These two cases of sclerosis are of interest from a diagnostic point of view. They confirm the opinion held by some neurologists that, in multiple spinal sclerosis, tremors do not exist, and that the most characteristic symptom of multiple cerebro-spinal sclerosis is loss of power, with tremors occurring only during movement.

The first case was believed during life to be, not a focal disease, but a lateral sclerosis, and we do not see, even in the light of the autopsy, how the correct diagnosis could have been made. Indeed, the sclerosed patches were often so elongated in certain tracts that the case may be considered to be, as it were, half way between one of continuous disease of spinal nerve tracts and one purely focal.

Case III.—Pseudo-Muscular Atrophy.

A. B, entered Dr. Wood's ward in the Philadelphia Hospital in a dying condition in October, 1884. No notes in regard to his chronic disease could be taken; but he was in 1880 a patient in the ward of Dr. C. K. Mills, to whom we are indebted for the following notes taken at that time:

"Moderate drinker; chancres several times; buboes once in '57. In '76 first noticed a weakness of the little finger of right hand, with a tendency to drop. The weakness affected in succession the ring, middle and index fingers. In about a year he noticed that the left forearm became weak, and in a very short time he was unable to use it. Left forearm and arm wasted during the year, and at same time he began to have trouble in the neck, whose muscles wasted rapidly, and in about five months he was unable to hold his head constantly erect, it having a tendency to drop forward. Shortly after this the wasting attacked the right forearm and arm. He affirms that a year ago, while in jail, he lost the use of both legs, but they did not waste. Present condition: In order to keep his head up he is compelled to throw the weight of head back of the ordinary vertical position. There is very great wasting of the following muscles: Splenius and complexus, trapezius, rhomboid, supra and infra spinati and serrati. The platysma-myoid and sterno-mastoid are wasted. The pectoral and latissima dorsi do not appear much wasted, but are flabby. Both arms hang perfectly helpless and flaccid. There is marked wasting in the deltoids, infra spinati, biceps and triceps, and all muscles of the forearm. The wasting is

not marked in the hands, either because it is less or because of fatty change. The palms of hands look and feel fatty. There is marked loss of power in the flexors and extensors of both forearms, but he still has a very good grip. The right triceps extensor has some power. In grasping he uses considerable power of the interossei and the superficial and deep flexors. At both elbows he has a condition of recurvature, probably because of the atrophy, relaxation of ligaments and wasting of ends of the bones. The faradic contractility is retained, but in varying amount. Lately he has attacks of dyspnœa. Says he never had any soreness or fatigue pains in the wasted limbs, neck or head. No fibrillary tremors noticed during the examination."

AUTOPSY.

Only the portions of body relating to the pseudo-muscular atrophy examined.

External Appearance.—Muscles of back of neck, erector spinal muscles to lumbar region, deltoids, pectoral, trapezius, supra and infra spinatus muscles, and biceps of both arms, apparently destroyed. Triceps humeri and sterno-cleido-mastoid muscles in part preserved; also all the muscles of legs. No *post mortem* rigidity in neck, shoulders or arms; moderately pronounced rigidity in forearms and legs. Right forearm, in circumference, 0.05 meters; arm, 0.05 meters; left forearm, 0.07 meters; arm, 0.06 meters. On opening the right arm the biceps was of a pale fawn color, but the triceps normal in color.

Spinal Cord.—On opening dura mater a slight amount of serous liquid ran out. Cervical cord: Membranes much thickened; itself very tough and gristly on section. Anterior cornua of gray matter illy developed, sunken in sections, and lacking color.

Microscopical Examination.—Transverse sections were made from the lower portion of the cervical enlargement of the cord. They present the following peculiarities:

In the anterior cornua of the grey matter there is a marked diminution in the number of nerve cells. Of the three groups of these cells, the anterior has almost entirely disappeared, the lateral group is represented by but a few individual cells, while the internal group seems to have undergone a less marked change. All of these cells, with the exception of a few in the internal group, appear shrunken and are evidently much diminished in size. They have lost in great part their polygonal shape, many of them being fusiform, and present but few processes. Only in the internal group are these cells in any way approaching the normal type, and these are few and seen in only a few of the sections. They present the characteristic size and numerous processes of the typical motor cell, while they disclose a well-defined nucleus and nucleoli. In the atrophied cells the nuclei can only be distinguished with difficulty.

The neuroglia of the anterior cornua is increased in amount, the vessels appear shrunken, with thickened walls and large perivascular lymph spaces.

In the lumbar cord the cells in the anterior cornua appear normal; in this respect the lumbar cord is in marked contrast with the cervical.

Anterior Nerve-roots of Cervical Cord.—Transverse sections show that the anterior nerve roots have for the most part lost their normal contour, many of them presenting a markedly irregular and shrunken appearance. In some the nerve fibres are well preserved and present but a moderate amount of the connective tissue element. In others the nerve fibres are few and scattered, while a mass of connective tissue occupies the body of the strand. In many sections large areas are seen in which no nerve-fibres can be detected, and the connective tissue has the appearance of having undergone marked contraction to which, outside of the atrophy of nerve fibres, the shrunken appearance of the nerve roots is doubtless due.

Nerves.—The nerves examined were the *median*, *ulnar* and *musculo-spiral*. Transverse sections showed that they had preserved their normal shapes. An extensive examination of many sections does not reveal any marked proliferation of connective tissue, nor do any of the nerve fibres show any decided signs of degeneration. Besides other reagents, osmic acid was employed with a uniformly negative result. It must be remembered, however, that the detection of a descending degeneration involving a limited number of fibres in a mixed nerve is a work of extreme difficulty, and that at best it could not be as well-marked as in the anterior nerve roots. Moreover, it may be stated that here and there areas exist in the sections in which the endoneurium seems to be more abundant than elsewhere, and that the nerve fibres lying in these areas are much smaller and have a much thinner medullary sheath than the fibres immediately adjacent. Though very suggestive, these

changes are of such a character that they would readily escape the observer unless they were especially sought for, and perhaps they constitute all that we ought to expect.

Muscles.—The muscle selected for study was the *biceps*, it being atrophied to an extreme degree. Transverse sections measured only three-fourths of an inch in one direction and three-eighths in another. The muscular fibres were also all of them less than normal in diameter, but varied greatly from an approximation to normal, to one-fifth or even one-sixth this size.

Teased preparations demonstrate the presence of an abnormal amount of connective tissue. In many bundles it predominates largely over the muscular fibres, and in transverse sections it is seen to occupy not only the spaces between groups of bundles but also to surround here and there individual fibres.

The fibres themselves appear faintly granular and the transverse striations are not as distinct as in the normal tissue; or rather, the fibres vary from those in which the striations are well preserved to those in which no trace of striation can be detected. The muscle-nuclei are also unusually prominent and this would suggest an imperfectly developed or immature condition of the fibres. In addition, osmic acid demonstrates the presence of a large amount of fat. This exists both within and around the fibres and its amount is so great that in teased preparations it appears here and there in the shape of large drops.

No observations on the more intimate relations between the muscle and its nerves were successful. Several transverse sections, however, included a nerve-twig so small that it seemed out of all proportion to the mass of muscle it was evidently intended to supply. Transverse sections also showed that the blood-vessels, though perhaps sufficiently numerous, were small and shrunken and appeared to have thickened walls.

Superior Cervical Ganglion of the Sympathetic.—Transverse sections when contrasted with similar sections from a normal specimen, appear to show a marked increase in the amount of connective tissue; at the same time the nerve-cells, though perhaps not decreased in number, appear more granular and their outlines and contents are less clearly defined. It is doubtful, however, whether we can attribute to these facts a special significance; at any rate repeated confirmation would be required to obtain a definite result. It might also be suggested that a study of the rami communicantes would be as important as a study of the ganglia.

LOCO-MOTOR ATAXIA.

Of this disease we have studied the cord in three cases. The first of these is of great diagnostic interest.

CASE IV.—Mr. ——, aged 50. About 1866 or '67 Mr. —— was forced to ride all night unexpectedly and without proper protection some fifty miles over a very high mountainous country, and became completely benumbed by the excessive cold. He was seized a few hours after this exposure with a violent pain which was diagnosticated as due to acute sciatica. He has suffered at irregular intervals ever since from attacks, which he stated to be similar in character to the first; the attacks becoming gradually more frequent and more severe until they have become almost incessant. During all these years he had been supposed to have rheumatism but received no benefit from anti-rheumatic treatment. He also affirmed that at no time had any joint been affected. He was first seen by Dr. Wood in the spring of 1884. At that time it was noted that the pains were described as very severe, shooting and burning in character, without soreness except momentarily after the pain. These occurred in both legs, were not attended with any stiffness or pain on movement, nor swelling of the joints. There was no loss of sensation that could be detected by the æsthesiometer, and no paralysis of any sort. The patella reflexes were entirely absent. Coördination appeared to be perfect. Mr. —— had been an active sportsman and his muscular powers seemed in every way to be unabated. At the time Dr. Wood was called in he was suffering from brain symptoms which rapidly developed into a cortical cerebritis of which he died. Under the circumstances no aid in the diagnosis could be derived from the state of the pupils; but a positive opinion was given that the patient had long suffered from posterior spinal sclerosis, the opinion being based upon the bilateral and other characters of the pain, the persistent absence of soreness, stiffness or pain on motion, the obstinacy of the disorder, and the absence of the patella reflexes.

The *autopsy* was obtained with much difficulty and only three days after death; the body having been part of this time on ice. The cord was very carefully manipulated but revealed so much of post-mortem change that

it was only possible to be thoroughly seen that the posterior columns were sclerosed in the lumbar region with complete obliteration of the posterior fissure. The exact relations of the scelerosis to the posetrior nerve roots could not be made out: but it was plain that the process was most intense in the portions of the posterior column farthest from the root-zone.

CASE V.—The second case died in the University Hospital of intercurrent disease whilst suffering from loco-motor ataxia. The notes show the presence of the typical symptoms of loco-motor ataxia, except that during his stay in the hospital the patient had no pains and *positively asserted that he never had had such pains.*

The following are the notes taken at the microscopical examination of the cord:

Cervical Cord.—Well developed sclerosis in the columns of Goll. The posterior fissure in some places is obliterated and the maximum changes are in the edges of the fissure. Between the free edges of the fissure are very numerous embryonic cells. The disease seems to have commenced in the parts immediately proximate to the fissure. There is also some multiplication of neuroglia cells in the immediate neighborhood of the spinal canal.

Dorsal Cord.—A wedge-shaped mass of densely sclerosed tissue occupies the portions of the posterior columns on each side of the posterior fissure, which is almost entirely obliterated, reaching about half way to the nerve roots; between it and the region of the nerve roots there is an increase of neuroglia elements, but the axis cylinders are mostly preserved. The line between the sclerosed and non-sclerosed tissue, mostly sharp. Pia-mater strongly inflamed over the region of the posterior fissure.

Lumbar Cord.—A distinct wedge-shaped mass of sclerosed tissue occupies the columns of Goll as in the dorsal cord. It is composed entirely of a very dense trabecular tissue, with scattered vacuoles as seen in section. This mass is separated by a pronounced line from the neighboring parts. Between it, however, and the posterior nerve roots the structure is more dense than normal, but still with numerous nerve fibres existing with intact medullary sheaths, probably about one-third of the nerve fibres are atrophied; beyond the nerve roots the tissue is normal.

CASE VI.—Dr. B., aged 50, physician and reputed abortionist. The patient walked into the clinic with a markedly ataxic gait, swayed when the eyes were closed and presented entire loss of the patella reflex. He appeared much older than he really was, spoke indistinctly, was slow of comprehension and presented decided symptoms of mental impairment.

It was exceedingly difficult to obtain a history from him, but after much trouble the following was elicited: He had been tolerably healthy all his life, but had been unsteady in his walk for several years. Remembers having had for a long time terrible pains in the back of his thighs, but does not remember having had any feeling of constriction about the trunk. He never saw double. Acknowledged gonorrhœa but denied syphilis.

On examining the case more closely the legs were found to be extremely ataxic, while the arms presented the same symptoms to a less degree. His depressed mental condition made it impossible to make a satisfactory study of the sensory phenomena. There were no eye-symptoms.

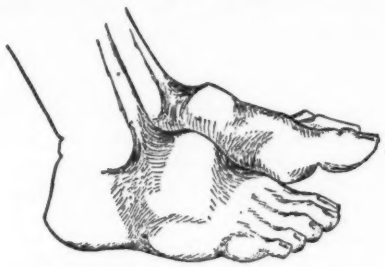
Taking the case as a whole, it presented nothing distinguishing it from an ordinary loco-motor ataxia, with the exception of the mental condition and a remarkable deformity of the feet. The man was flat-footed to an extreme degree, while large hard prominences existed over the instep. He could give no intelligent account of these lesions, saying simply that the trouble had come on suddenly, that he had hurt himself—had "broken his feet"—but could not tell when or how. He had never had any pain in them.

After remaining in the ward for several weeks, during which a progressive loss of strength made him bed-fast, a large sloughing ulcer of the buttock made its appearance and he died of exhaustion, or possibly septicæmia.

At the post mortem, in addition to other lesions about to be described, a large gumma of the liver was discovered, proving that the patient's statements in regard to syphilis had been incorrect.

The general form and outline of the feet corresponded very closely with the description and figures given Prof. Charcot and J. M. Féré (*Archives de Neurologie*, VI. 306; also, another case, *Revue de Méd.*, 1884, p. 473) of the so-called *Pied tabètique.* They presented the following peculiarities: The arch of the foot was entirely lost, so as to bring the plantar surface continuously to the ground from the heel to the toes. The change had been accompanied by an increase in thickness over the tarso-metatarsal articulation, so that,

although the foot rested flat upon the ground, this region was very prominent. The prominence was most marked on the inner edge.



The deformity was greatest in the left foot, which being a unique specimen was preserved intact, while the right foot was dissected sufficiently to reveal the nature of the lesion.

The ankle-joint, which was the first examined, exhibited no enlargement, nor did the articulating surfaces of the tibia and fibula yield any evidences of disease. The articulating surfaces of the astragalus, however, were here and there denuded of cartilage and much roughened. Similar changes, though slight, were noticed in the calcaneum, but it was in and about the joint formed by the internal cuneiform and first metatarsal bones that the greatest amount of change had occurred. The cartilage had entirely disappeared from its upper portion. Here the two bones had become firmly united. The microscope revealed a continuous osseous structure from one to the other. The lower portion of the joint, which was equivalent to about three-fourths of its entire area, was simply filled by continuous or adherent surfaces of cartilage, while here and there a narrow chink, representing the original cavity of the joint, was left. The bones appeared enlarged and distorted, and an examination of their internal structure showed that the cancellated tissue had been replaced here and there by small masses of dense ossific deposit.

The middle cuneiform and second metatarsal bones were partly crowded over the internal unciform and first metatarsal bones, and presented lesions similar to those just described. The heads of the two metatarsal bones had in one place become continuous, and one section revealed an isthmus of bone uniting an angle of the internal cuneiform with the head of the second metatarsal.

The general impression given by the study of these lesions was that of a mass of bones which, being at one time softened, had been mechanically distorted and displaced. The absorption or deposition of bony tissue appeared to follow no rule, nor did the destruction of the cartilage distinguish itself by any peculiarity other than that it seemed to precede the changes in the bones.

Lumbar Cord.—Central canal completely filled by a mass of connective tissue cells which also abounded in the neighboring tissue. Anterior fissure marked, but at its edges very distinctly sclerosed, with an abundance of nuclei and very few, if any, tubules in the tissue immediately near the margins. Antero-lateral columns showed great excess of connective tissue, very numerous nuclei and much fewer than normal normal nerve tubules. Posterior columns and root zones densely sclerotic with complete obliteration of nerve tubules and of the posterior fissure; the whole making a wedge-shaped mass showing, in the less affected tissue. Grey matter with more connective tissue, nuclei, and denser neuroglia than normal. Nerve cells normal.

Dorsal cord as lumbar, except that the antero-lateral columns were much less affected.

Cervical cord.—Central canal and posterior fissure obliterated, and the posterior tracts sclerosed as in the other portions of the cord; but the changes in the antero-lateral columns less marked than in the dorsal region.

CASE VII.—ACUTE ASCENDING OR LANDEY'S PARALYSIS.

A. K., aged 38, Brewer. The patient, a large robust-looking man, had had no illness of moment up to the present attack. He had acknowledged having had a chancre at the age of eighteen, and had long been accustomed to drink daily enormous quantities of beer. When first examined, February 14, 1884, he complained of numbness in both legs but walked about and ascended a stairway without apparent difficulty. He called attention especially to a small, deep and sharp-cut ulcer on the plantar surface of the great toe of the right foot. Though deep it did not penetrate to the bone.

On February 17th, three days later, he was again visited in response to a hasty summons. He had on that day been unable to leave his bed. A careful examination now revealed decided paresis of the muscles of the legs, and an area of marked anæsthesia on the inner aspects of the calves. The two limbs appeared to be affected equally. Two days later, complete paralysis of the legs and thighs and some paresis of the hands were noted. In the course of a week the disease had progressed so far as to involve all four extremities alike. The muscles of the trunk were then attacked in turn. The patient, when raised or pulled into

a sitting posture, collapsed into a flaccid, helpless mass. Breathing was at this time much interfered with, being labored and almost solely diaphragmatic.

There was now a temporary lull in the advance of the symptoms which continued until the last day of February. He then partially lost control of the muscles of the neck, and on the first of March had decided difficulty in swallowing. This continued for several days. Signs of alienation also made their apperance, the patient believing himself to be a cavalry officer on parade.

He continued in this critical condition until the fourth of March. The difficulty in swallowing was then no longer noticeable and the control over the muscles of the neck seemed to have been regained. He now remained for the period of a week without other change than a commencing return of power in the muscles of the trunk, and he no longer fell into a heap when raised into a sitting position. The return of power in the arms and legs was gradual in the extreme. On the 27th of March, when circumstances required his removal to the hospital, though he had regained almost complete control of the muscles of the trunk, his arms had progressed only so far on the road of recovery as to enable him to hold a glass by pressing the two hands together. The grip was still absent. He had also regained partial control over the muscles of the thighs.

At the hospital, his recovery though slow, seemed assured. At the end of six weeks he had so far regained the power of his hands and feet as to enable him to partially dress himself and to walk a distance of ten or twelve feet. His appetite was fair and he was able to feed himself. Although much emaciated his prospects seemed most promising, when he suddenly developed a rapid and enormous pleural effusion. This accident, due probably to some trivial exposure in his weakened condition, was relieved by paracentesis but promptly recurred and although relieved a second time, the patient succumbed.

In this interesting history, the significance of the ulcer on the great toe is rendered doubtful by the fact of its ante-dating, by four or five days, all signs of paralysis. However, as soon as the patient presented symptoms of improvement, the ulcer began to heal and by the second week of March had, with the exception of a small scar, entirely disappeared. At various times small hæmorrhagic exudations were observed under the plantar epidermis, but they were never very large nor extensive.

Regarding the original or exciting cause of the disease, inquiry disclosed the fact that the patient had been exposed to a cold drenching rain for an entire day about a week preceding his illness. His specific history must also be borne in mind, as well as the fact of his daily consumption of enormous quantities of beer.

His treatment consisted in the early period of his disease in active counter-irritation and large doses of iodide of potassium and ergot. These drugs he bore remarkably well. Later on, he was placed on nitrate of silver.

It is worthy of remark that beyond a temperature of 100.5° observed during the first week, no notable rise of temperature occurred.

On account of the objections raised by the friends to an autopsy, only the dorsal and lumbar cords were obtained for study; the following is the detailed results of the microscopic examination:

Lumbar Cord.—The posterior fissure in all the sections is either entirely obliterated, or else is coherent in its exterior portions, and interruptedly joined within so as to leave closed spaces with much thickened edges. In the *posterior columns*, near the grey matter, the tubules are abundant, but very much reduced in size, the change especially affecting the myeline which is wasted; the whole tissue near the centre of the cord appears abnormally dense and opaque, and is indeed more dense than in the peripheral portions; as the circumference of the cord is approached, the tubules loose their myeline and are reduced to simple axis cylinders, the latter themselves also being smaller than normal; finally the axis cylinders grow smaller and smaller, until they fade out entirely.

The *lateral columns* reveal changes similar to those just detailed, but less pronounced. The *anterior columns* seemed to be the least affected; the anterior fissure is everywhere free and open.

The grey matter is more dense and opaque than normal. Some of the motor cells are in portions of them slightly yellowish, but most of them simply seem a little more granular than normal; there is an enormous multiplication of cells of the ependyma nearly blocking up the central canal.

In all parts of the cord the neuroglia seems more granular than normal.

Dorsal Cord.—The posterior fissure is coherent in its peripheral portion ; the tubules in the immediate neighborhood of the fissure are all gone: following round the periphery of

the cord until the region of the lateral columns is entered, no tubules are apparent, except a very few remarkably small ones near the root zones. About one-third of the distance towards the centre, the posterior fissure becomes disconnected, with its edges thick and sclerosed. As the field is turned away from the fissure towards the lateral columns, the nerve tubules become more apparent, until the nerve roots are reached. Incipient similar changes are apparent, but not nearly so marked, in other portions of the white matter of the cord. The motor cells of the grey matter are normal in appearance.

REMARKS.

The changes in this cord were in some of their appearances similar to those of a secondary degeneration. There was, however, no starting point for such degeneration, and these changes were not confined to regions of the cord which would be naturally reached by such degeneration. Unfortunately the nerves and their roots were not examined at all, but the condition of the cord is of great interest in connection with the observation of Déjerine of an apparently similar change in the nerves. We cannot think that there is any probability of these changes being secondary to alterations in the large ganglionic cells of the cord. Neither Déjerine nor ourselves were able to detect any change in the contour or appearance of the cells; and it does not seem philosophical to assume such change, especially as, at least in our case, regions of the nervous system not believed to be under the trophic influence of these ganglionic cells were affected.

CASE VIII.—GENERAL MYELITIS SUPERVENING UPON A SUB-ACUTE MYELITIS OF SPECIFIC TYPE.

H. S. entered the wards of the University Hospital, Nov. 11, 1884. The following history aud notes upon the case are extracted from the Hospital case book:

The patient's statement is as follows: "He had a chancre in February, 1883, and in December of the same year, began to suffer from nervous symptoms; the only secondaries having been some sores in the calves of the legs. During the day of September 8th, 1883, he felt a little weakness in his legs, but went to bed believing that he was entirely well. When he awoke in the morning he was almost unable to walk. He got a few steps from his bed and could go no further. He was then taken to some hospital, where he very rapidly passed into the condition that he is in at present. He affirms that he has at no time suffered from headache or mental disturbances."

Present Condition.—Lying in bed, he cannot raise his legs from off the bed, although he can lift his knees somewhat. The legs are well nourished, the muscles large and firm, and their temperature good. He is able to move all the muscles slightly; he complains much of pain in the legs, which came on, he states, soon after the palsy. These pains are both aching and darting. Both the legs are very rigid, the left leg slightly worse than the right; the patella reflex is markedly exaggerated, but there is no ankle clonus, and the cremaster reflex is feeble. There are very marked muscular tremors in the quadriceps femoris of the left leg. At night he suffers much from jerkings, and violent quick movements of the legs. The electric contractility of the muscles of the legs is beyond normal. He lies with his legs rigidly adducted, but the feet are not crossed. When tested with the æsthesiometer, he can feel the single point pushed forcibly against the skin of the leg, but is unable to separate the points at any distance whatever. The arms are slightly rigid; there is also marked failure of the power of the left arm. Very distinct pain is caused by moving the legs or arms. The pupils are at times unequal, but respond to light or pinching the neck. At times when excited, he seems to lose control over the organs of speech, makes faces, and appears indeed to have a sort of facial spasm. An ophthalmic examination fails to show any alteration of the nerve indicative of central disease. The belly is tympanitic. He has some little control over his bladder, but none over his bowels.

Ordered anti-specific treatment:

Dec. 12th.—No improvement in patient; evident failure of general systemic powers, and the legs are distinctly wasting and his power over them less.

Dec. 14th.—Man seized with vomiting and hiccough.

Dec. 16th.—Patient evidently very rapidly failing; still has hiccoughs at intervals. The patella reflex is easily excited, indeed is abnormally active, but there is no power in the muscles, and the reflex is soon exhausted on repetition of the tapping.

Died Dec. 17th, of exhaustion.

AUTOPSY.

About ten hours after death; owing to the violent opposition of patient's friends,

the dorsal and lumbar portions of the cord alone could be obtained. On microscopical examination both dorsal and lumbar regions were found to be in the same condition. The white and gray tracts were, in all parts, almost equally affected. The nerve tubules were entirely gone and no trace of any of them to be seen. The large ganglionic cells were for the most part absent, and only two or three perfect ones were found in a careful search through several sections. A large proportion of the few still at all existent were shrunken, with the processes more or less gone, and usually had no distinct nucleus. Everywhere through the cord there were immense numbers of large roundish neuroglia cells. The fissures, especially the posterior, were more or less completely obliterated. The central canal was entirely choked up with cells.

EXPERIMENTAL INVESTIGATION OF THE REACTIONS OF VARIOUS COPPER SALTS WITH GRAPE SUGAR—SOME NEW AND RELIABLE TESTS FOR SUGAR IN URINE.

By George Hay, M. D., Pittsburgh, Pa.

WITH the object in view of finding out experimentally some ready method of ascertaining beyond a doubt the presence of grape sugar in the urine, I have for many months been making experiments. When the results of these experiments are looked into it will be seen that I have adhered to one systematic method of investigation, that being, in my opinion, the only way to arrive at satisfactory conclusions. Some years ago I pointed out,in the *Phila. Medical Times*, "The Fallacy of Trommer's Test," the precise dates being July 21st, 1877, and October 27th, 1877. Since that time my opinions regarding Trommer's test have not altered in the least degree, and I am now more than ever convinced that Trommer's test is utterly unreliable as usually applied, and is, in point of fact, no test at all. When applied to a solution of grape sugar in pure water, Trommer's test will answer very well, but when applied to diabetic urine, the results are far from being satisfactory. Sugar will apparently be found when none is present, and, conversely, no sugar will be found when it is really present. The importance of knowing the presence or absence of sugar in the urine is too manifest to require any remark. I shall therefore without further introduction detail my experiments as shortly and concisely as may be done consistently with being intelligible, and I shall avoid all attempts at theorizing, although that is a much more easy thing than real experimentation. I shall detail the results in the exact order in which I made the experiments under the headings of the various copper salts.

§ 1st. CHLORIDE OF COPPER.

a. Chloride of copper, gr. j; dissolve in water f. ʒ ij. in a test tube. Add solution of caustic potash in excess. Precipitates blue hydrate—protoxide of copper. Heat. Precipitate becomes black protoxide.

b. Chloride of copper, gr. j., dissolve in water f. ʒ ij. Add aqueous solution of grape sugar gr. $\frac{1}{8}$, then add caustic potash in excess. —an intense blue solution. Heat. Solution becomes yellow, afterwards there forms a beautiful red precipitate of suboxide of copper. Heating continued—precipitate becomes a dirty brick red, unchanged by continued heating.

c. Chloride of copper, grs. ij., in solution: add to urine f. ʒ ij. containing grape sugar gr. $\frac{1}{8}$—greenish-grey precipitate. Add caustic potash in excess—greenish-grey precipitate becomes dissolved to intensely blue fluid. Heat. Fluid becomes first nearly black. Afterwards, fluid red by transmitted light. Upon long continued heating red color disappears and fluid contains yellowish-red precipitate of suboxide of copper. Let settle. Reduction and separation very slow.

d. Chloride of copper, grs. iv., in solution. Add to urine f. ʒ iv. containing grape sugar, gr. $\frac{3}{8}$. Greenish-grey precipitate. Heat. Filter. Divide filtrate into two equal parts. To one part add caustic potash in excess—blue solution. Heat. Same changes occur as in *c.*, but much more rapidly, and precipitate separates sooner and is of a distinctly orange color. To the other portion of filtrate add a little Rochelle salt, then potash in excess—blue solution. Heat. Precipitation and reduction very much retarded by presence of Rochelle salt and the precipitate not nearly so characteristic as when the Rochelle is omitted. Takes several hours to precipitate.

§ 2nd. SULPHATE OF COPPER.

a. Sulphate of copper saturated solution, gtt. xv. Water f. ʒ ij. Add potash in excess —precipitate blue hydrated oxide of copper. Heat. Precipitate becomes black protoxide.

b. Sulphate of copper saturated solution, gtt. xv. Water f. ʒ ij. Solution of grape sugar, gr. $\frac{1}{8}$. Add potash in excess—blue solution.

Heat. Very soon a precipitate forms, dark orange-red, suboxide of copper.

c. Sulphate of copper saturated solution, gtt. xv. Urine, f. ʒ ij., containing grape sugar, gr. ½. Add potash in excess—blue solution. Heat. Reduction very slow. In about an hour yellow precipitate of suboxide of copper. Heating continued precipitate becomes orange-yellow suboxide. Let settle.

d. Sulphate of copper saturated solution, gtt. xxx. Urine, f. ʒ iv., containing grape sugar, gr. ⅝. Greenish precipitate. Heat. Cool by immersion. Filter. Divide filtrate into equal parts.

To one part add potash in excess—blue solution. Heat. Fluid becomes clear red by transmitted light, afterwards opaque, and in half an hour contains a reddish-brown precipitate of suboxide of copper.

To the other part of filtrate add Rochelle salt grs. iv., then potash in excess—blue solution. Heat. Fluid becomes clear red by transmitted light, afterwards opaque, and in ten minutes contains a distinctly yellow precipitate of suboxide of copper. It appears, therefore, that in this case precipitation is accelerated by the presence of Rochelle salt. In regard to this particular reaction I am informed that I have been anticipated as regards publication. It is a decided improvement upon Trommer's test but not half so good as some other tests of my own, which shall be detailed in this article, and which I shall particularly recommend.

§ 3d.—COPPER NITRATE.

a. Copper nitrate, strong solution, gtt. x. Water, f. ʒ ij. Add potash in excess—precipitate blue hydrated protoxide of copper. Heat. Precipitate soon becomes black protoxide.

b. Copper nitrate, strong solution, gtt. x. Water, f. ʒ ij., containing grape sugar gr. ⅛. Add potash in excess—blue gelatinous precipitate appearing semi-solid in the tube. Heat. In a short time a dirty orangec-olored precipitate of suboxide, which becomes dirtier on continued heating.

c. Copper nitrate, gtt. x. Urine, f. ʒ ij., containing grape sugar gr. ⅛. Greenish-grey precipitate. Add potash in excess—yields dirty blue precipitate. Heat. Reduction very slow and very imperfect, and accompanied by a great deal of white precipitate which masks the reaction.

d. Copper nitrate, gtt. xx. Urine, f. ʒ iv., containing grape sugar gr. ⅝. Greenish-grey precipitate very abundant. Heat. Cool thoroughly by immersion. Filter and divide filtrate into two equal parts. To part 1 add potash in excess—an intense blue solution. Heat. In fifteen minutes yellow precipitate of suboxide of copper, which becomes orange-yellow on continued heating. Let settle.

To part 2 add Rochelle salt, grs. iv., and then potash in excess—an intense blue solution. Heat. In five minutes orange yellow precipitate of suboxide of copper. Therefore the precipitation is accelerated by the presence of Rochelle salt, and is much more characteristic. The precipitate becomes darker orange on continued heating.

The nitrate yields better results by this method than the sulphate, and it seems to me that phosphates and other interfering substances are more thoroughly removed from the urine.

§4th.—COPPER ACETATE.

a. Copper acetate, saturated solution, gtt. xx. Water, f. ʒ ij. Add potash in excess—blue precipitate,hydrated protoxide of copper. Heat. The precipitate becomes black protoxide.

b. Copper acetate, saturated solution, gtt. xx. Water, f. ʒ ij., containing grape sugar, gr. ½. Add potash in excess—slight blue precipitate. Heat. Precipitate changes to yellow, and ultimately becomes a full red suboxide of copper.

c. Copper acetate saturated solution, gtt. xx or more. Urine, f. ʒ ij., containing grape sugar gr. ½. Shake the tube. Abundant grey precipitate. Add potash in excess—greater part of precipitate redissolved to a purple-blue solution. Heat. Fluid becomes clear yellow, next a dingy brown, and yields in half an hour's heating a reddish-brown precipitate of suboxide of copper.

d. Copper acetate, saturated solution, gtt. lx or more. Urine, f. ʒ iv., containing grape sugar, gr. ⅝. Grey precipitate persistent on shaking. Heat. Buff-colored precipitate, supernatant fluid green. Cool by immersion. Filter, and divide filtrate into two equal parts. To one part add potash in excess. Smoke colored solution. Heat. Fluid becomes yellow then brown, and in fifteen minutes deposits a reddish-brown precipitate of suboxide of copper.

To the other part add Rochelle salt, grs. iv., and then potash in success. Yields a smoke-colored solution. Heat. Fluid goes through the same changes as when Rochelle salt is absent.

§ 5th.—COPPER OXALATE.

a. Copper oxalate, dry, fine powder, grs. ij. Diffused in water, f. ʒ ij. Very slightly soluble. Add potash in excess—blue flocculent mass. Heat with shaking deposits black protoxide.

b. Copper oxalate, dry, fine powder, grs. 1½ diffused in water f. ʒ ij., containing grape sugar, gr. ½. Add potash in excess—blue solution. Heat with shaking. Solution speedily contains a beautiful and characteristic red suboxide of copper, which upon continued heating becomes dingy red, unchanged by long heating.

c. Copper oxalate, fine powder, grs. 1½, diffused in urine f. ʒ ij., containing grape sugar, gr. ½. Add potash in excess—white flocculi and no blue solution. Heat with shaking. Flocculi and fluid become yellow, and in twenty minutes fluid contains yellow precipitate of suboxide of copper. Unchanged by long-continued heating. This reaction is very curious.

d. Copper oxalate grs. iij., dry fine powder diffused in urine f. ʒ iv, containing grape sugar gr. ⅔—greenish white mixture. Heat with shaking. Cool by immersion. Fluid contains white pulverulent precipitate. Filter. Filtrate very pale green containing very little of copper salt. Divide filtrate into two equal parts. In one part diffuse grs. 1½ of copper oxalate. Add potash in excess—greenish blue solution. Heat. Fluid becomes yellow, then orange, and in twenty minutes heating contains reddish brown precipitate of suboxide of copper unchanged by long heating. To the other part add potash in excess—smoke tinted solution. Heat. Fluid becomes light straw color, then dark yellow orange and in half an hour heating contains a reddish brown precipitate of suboxide of copper. This precipitate unchanged by long-continued heating.

§ 6th. COPPER CITRATE.

a. Copper citrate grs. 1½ dry powder diffused in water f. ʒ ij. Sparingly soluble. Add potash in excess—blue solution. Heat. In a short time precipitate of black protoxides.

b. Copper citrate grs. 1½ dry powder in water f. ʒ ij. containing grape sugar gr. ½. Add potash in excess—blue solution. Heat. Solution becomes yellow and soon deposits bright red precipitate of suboxide of copper. On continued heating changes to dirty brown suboxide.

c. Copper citrate grs. 1½ dry powder in urine f. ʒ ij. containing grape sugar gr. ½. Add potash in excess—blue solution. Heat. Solution becomes yellow and in ten minutes deposits dirty brown precipitate of suboxide of copper.

d. Copper citrate grs. iij. in urine f. ʒ iv. containg grape sugar gr. ½. Heat with shaking for ten minutes. Cool by immersion. Grey precipitate. Filter. Divide filtrate into two equal parts. To one part add potash in excess—very pale blue solution. Heat. Fluid becomes yellow and in thirty minutes deposits a little dirty brown suboxide of copper.

To the other part of filtrate add copper citrate grs. 1½, then potash in excess—blue solution. Heat. Fluid becomes yellow and in five minutes deposits dirty brown suboxide of copper. Very little changed by continued heating.

§ 7th. COPPER TARTRATE.

a. Copper tartrate grs. 1½ dry powder diffused in water f. ʒ ij. Add potash in excess—beautiful blue solution. Heat. Fluid remains blue for a considerable time but upon long continued heating deposits black protoxide of copper.

b. Copper tartrate dry powder grs. 1½ diffused in water f. ʒ ij containing grape sugar gr. ½. Add potash in excess—bright blue solution. Heat. Fluid becomes yellow and in one minute deposits a characteristic bright scarlet red precipitate of suboxide of copper which changes extremely little upon long continued heating. This is the really typical suboxide of copper reduced by sugar and the more nearly we can approach to this in the examination of a urine the more satisfactory that examination will be. If there be an excess of tartrate of copper the supernatant fluid remains blue after complete settling of the suboxide.

c. Copper tartrate dry powder grs. 1½ diffused in urine f. ʒ ij containing grape sugar gr. ½. Add potash in excess—blue solution. Heat. Fluid becomes yellow and in ten minutes deposits dirty yellow precipitate of suboxide of copper, which upon long heating becomes a very dirty yellow. Sometimes the precipitate is characteristic but no dependence can be placed on the method, although generally better than the sulphate plan *i. e.* Trommer's test.

d. Copper tartrate grs. iij diffused in urine f. ʒ iv containing grape sugar gr. ⅔. Heat with shaking for ten minutes. A portion of the tartrate dissolves. (There should be excess of tartrate *i. e.* a portion should remain undissolved.) Cool by immersion—buff colored precipitate. Filter. Divide the light green filtrate into two equal parts. To the

one part add potash in excess—pale blue color. Heat. Solution becomes yellow, depositing at first a whitish flocculent precipitate which becomes in thirty minutes heating a reddish brown precipitate of suboxide of copper.

To the other part of filtrate add copper tartrate grs. 1½ then potash in excess—an intense blue solution. Heat. Solution becomes murky and in ten minutes deposits an orange yellow precipitate of suboxide of copper which is somewhat characteristic. Upon long continued heating the precipitate becomes dirty orange yellow.

§ 8th. COPPER ACETATE FOLLOWED BY COPPER TARTRATE.

Copper acetate saturated solution gtt. xxx or more, added to urine f. ʒ ij containing grape sugar gr. ½. Shake the tube—an abundant whitish precipitate. Heat for ten minutes and then cool by immersion—precipitate very bulky. Filter, throwing the precipitate upon the filter and allowing to drain in all cases and to the filtrate add a few drops more of copper acetate to make sure that everything precipitable by it has been removed. If the fluid remains clear add copper tartrate grs. 1½, then potash in excess—an intense blue solution. Heat. Very soon the fluid contains a bright yellow precipitate, changing to a bright orange yellow, and in very few minutes there separates a reddish-yellow or orange precipitate of suboxide of copper, which alters but little upon long-continued heating. If the tartrate is in excess the supernatant fluid is blue. This re-action is very satisfactory and the precipitate unmistakable. Let settle.

§ 9th. ZINC SULPHATE FOLLOWED BY COPPER TARTRATE.

Zinc sulphate solution, one in ten, gtt. x, add to urine f. ʒ ij containing grape sugar, gr. ½—an abundant flocculent white precipitate. Heat a portion of the precipitate re-dissolved. Cool by immersion and filter. Test filtrate with one or two drops of zinc sulphate solution. It it remains clear, proceed as below; if not, filter again. To filtrate, add copper tartrate grs. 1½, then potash in excess—clear blue solution. (The potash must contain no carbonate). Heat. In one minute the solution contains a bright yellow precipitate of suboxide of copper, which, upon continued heating, becomes bright orange yellow. This reaction is quite satisfactory, and the precipitate unmistakable. Let settle.

§ 10th. ZINC ACETATE FOLLOWED BY COPPER TARTRATE.

Zinc acetate solution, one in ten, gtt. x, add to urine f. ʒ ij containing grape sugar, gr. ½—an abundant flocculent white precipitate. Heat—precipitate does not apparently re-dissolve to any considerable extent. Cool by immersion and filter. To filtrate add copper tartrate grs. 1½, and then potash (free from carbonate) in excess—perfectly blue solution. Heat. In one minute solution contains bright yellow precipitate of suboxide of copper, which soon changes to a bright orange yellow, very closely resembling precipitate obtained as in § 7th *b*. This reaction is most satisfactory, and precipitate unmistakable. Let settle. The supernatant fluid will be blue if enough of the copper tartrate has been used. Be sure that enough of the zinc acetate has been added. It is sometimes necessary to add as much as grs. ij of the solid acetate to urine f. ʒ ij before all that is precipitable by it is precipitated. If a large quantity of the acetate has been needed, the addition to the filtrate of a little Rochelle salt and dilution with half a volume of water, will much favor the reaction.

§ 11th. ALUMINA SULPHATE FOLLOWED BY COPPER TARTRATE.

Alumina tersulphate solution, one in ten gtt. xx, add to urine f. ʒ ij containing grape sugar gr. ⅛. Heat—copious white flocculent precipitate. Cool by immersion and filter. Test filtrate with a little more alumina sulphate. If it remains clear, proceed as below; if not, filter again. To clear filtrate, add copper tartrate grs. 1½, a little Rochelle salt, and then potash (free from carbonate) in excess—clear blue solution. Heat. Solution soon becomes yellow, and after one hour's heating there is a yellow precipitate of copper suboxide, which is not very satisfactory. The yellow precipitate is preceded by a white substance insoluble in excess of potash. It will be found that the less the quantity of the original precipitate, the sooner will the suboxide make its appearance. This sulphate of alumina method, though much better than Trommer's test, cannot, in my opinion, be very highly commended. Let settle.

§ 12th. ALUMINA ACETATE FOLLOWED BY COPPER TARTRATE.

Alumina acetate, strong solution q. s., add to urine f. ʒ ij, containing grape sugar gr. ½. Heat—reddish white flocculent precipitate.

Cool by immersion. Filter. Test filtrate by addition of a little more acetate solution. If it remains clear on heating, proceed as below; if not, filter again. To filtrate add copper tartrate grs. 1½, and a little Rochelle salt. Now add potash in excess—clear blue solution. Heat—fluid soon becomes yellow, then orange yellow, and contains a white, insoluble substance which settles first, leaving orange yellow suboxide of copper suspended above it. Let stand in tube-rack, and by and by the orange yellow suboxide will also settle, so that at the bottom of the test-tube there will be two strata of precipitate, the white, insoluble substance lowest, over-laid by the orange yellow precipitate of suboxide of copper.

This method cannot be considered so highly satisfactory as some of those already described. Still, it is reliable, and much better than Trommer's test.

§ 13th. TIN PROTOCHLORIDE FOLLOWED BY COPPER TARTRATE.

Tin chloride, strong solution gtt. x added to urine f. ʒ ij containing grape sugar gr. ⅛. An abundant beautiful pink precipitate. Heat. Cool by immersion and filter. Test filtrate by adding one more drop of tin solution. If fluid remains clear, proceed as below. If not, add a few more drops tin solution; heat and filter again. To filtrate add solution of soda carbonate to faint alkaline reaction and heat—yellowish white precipitate of tin oxide. Filter hot. Filtrate contains no tin. To filtrate add tartaric acid to faintly acid reaction and then copper tartrate grs. 1½ Now add potash in excess—a beautiful, clear blue solution. Heat. In five minutes fluid becomes yellow; in ten minutes orange-yellow precipitate which almost completely separates in fifteen minutes as a beautiful orange-yellow, and thoroughly characteristic precipitate of subcarbonate of copper. Let settle—precipitate unmistakable and supernatant fluid remains blue if sufficient copper tartrate has been added. This is an excellent method.

NOTE.—The separation of the excess of tin by soda carbonate is absolutely necessary, for if this be not done the copper is not reduced to suboxide at all, but a quite black precipitate forms on heating the alkaline solution. This black precipitate consists partly of some material which is slowly soluble in hot hydrochloric acid with evolution of gas, and partly of metallic copper, which does not dissolve in hot hydrochloric acid if air be excluded, but is rapidly and completely soluble (after removal of all that is soluble in hydrochloric acid) in nitric acid or aqua regia.

§ 14th. ACETIC ACID AND LEAD ACETATE FOLLOWED BY COPPER TARTRATE.

Urine f. ʒ ij containing grape sugar gr. ⅛. Add strong acetic acid gtt. iij, then solution of lead acetate with shaking as long as a precipitate forms. Heat. Cool by immersion. Filter. Test filtrate by addition of one or more drops of sugar of lead solution. Filtrate remains clear, proceed as below. If not, add more sugar of lead, heat and filter again. To clear filtrate add copper tartrate grs. 1½ and a little Rochelle salt—precipitate of lead tartrate. Never mind this. Add potash (free from carbonate) in excess sufficient to dissolve all oxide of lead at first precipitated—clear blue solution. Heat. Fluid becomes yellow and in five minutes there is a distinct orange-yellow precipitate of suboxide of copper. Let settle. Precipitate unmistakable.

Were I writing for chemists alone I should stop here and not write another word, but as the above article is intended for the use of medical men, the majority of whom are not chemists, a few additional words of explanation are necessary. When I say "Heat" I mean heat by floating the tube in water which is kept boiling as in a water bath and not by holding the tube over a naked flame. When I say "Cool" I mean that the tube is to be placed in cold water. Further, in all cases it should be ascertained that the urine contains no albumen. If it does, the albumen should be removed by heat and filtration before the above tests are applied. If the above directions are carefully followed, no matter what kind of urine is under examination, sugar will be found by the new tests which I have proposed and to which I shall refer presently under the above sections.

These investigations have cost me a great deal of labor, but—"*Nihil bonum sine labore.*" The above tests are infinitely better than any which have been hitherto proposed, and in an experience of twenty-five years as a chemist I have tried all hitherto proposed tests for sugar in urine, Trommer's test included, and have found the majority of them worthless. I started out in the above investigations with the idea of finding but one reliable test for sugar in urine and now better than Saul, the son of Kish, I may say "Lo, I have found seven!" The seven reliable tests are described in Sections 8th, 9th, 10th, 11th, 12th, 13th, and 14th. I can confidently recommend

NOTE.—The precipitation of saccharide of lead is in great measure prevented by the acidulation of the fluid with acetic adid.

8th, 9th, 10th, 13th, and 14th, as being in my opinion excellent methods. The methods in in Sections 11th and 12th are not quite so good. Any one of these methods may easily be made a quantitative, gravimetrically, by simply washing, drying and weighing the sub-oxide, or volumetrically by dissolving it and adding a standard solution of some substance which will peroxidize it and indicate a final reaction.

I shall not propose any such at present. I shall only suggest that for quantitative purposes 8th, 9th, 10th, and 13th would be the best, and that of these four 8th and 13th should take precedence. For the above tests the officinal "liquor potassæ" will not answer at all—it is far too weak. A suitable solution of potash may be made by dissolving six sticks of caustic potash in distilled water f. ʒ ij. Twenty drops of such a solution will usually be found sufficient; if not, add more.

Throughout the above investigations there runs one general idea, viz., the separation of interfering substances, these being removed by the first precipitate mentioned in each section. As I stated at the outset of this article I shall make no attempt at theorizing but shall leave that portion of the work to be done by others.

616 Penn Avenue, Pittsburgh, Pa.

ANTISEPTIC INTESTINAL MEDICATION.

By Dr. Dujardin-Beaumetz.*

PATHOLOGISTS have long suspected that in a certain number of infectious diseases, the fermenting contents of the intestines, and putrescent fæcal matters, may have a preponderant rôle, and this view has been especially entertained respecting the pathogeny of typhoid fever. In fact in this disease the contagious principle has long been located in the dejections. But the discovery on the one hand of the alkaloids of putrefaction, and the attentive study of micro-organisms on the other hand, have given us a clearer insight into this pathological question and established on scientific bases an antiseptic intestinal medication. Before describing the agents of this medication, I have something of importance to say concerning the examination of intestinal matters from the point of view of putridity, and concerning physiological experiments which have been made to elucidate this subject.

The existence of putrid fermentation taking place in the contents of the intestines is proved by (1) the presence of certain micro-organisms; (2) certain cadaveric alkaloids; (3) finally, certain special products such as indol and skatol, which originate in modifications undergone by albuminoid matters.

(1) As Netter has well remarked in his able review of the chemical poisons which the organism produces, it is to Leuwenhoeck that we must ascribe the discovery of the micro-organisms contained in fæcal matters. This early microscopist noted the presence in fæces of animalcules, similar to the anguillulæ of vinegar, but of infinitely smaller dimensions. Since then all these organisms have been classified, and micro-biologists have described multitudes of all varieties and species. These micro-organisms have several origins; they are derived from our food, which contains a prodigious quantity; they exist also in the air which we breathe, which contains innumerable microbes, as the curious researches of Miquel have shown.

This air, it may be said, does not penetrate into the intestine; this is true, but it filters through the anfractuosities of the nasal fossæ and the pharynx, and these micro-organisms, retained in these points by the secretions of the mucous membranes, easily gain the digestive tube.

It is in this way, I believe, that is explained the diarrhœa so frequently provoked by prolonged sojourn in our post-mortem and dissection rooms.

Miquel has, in fact, shown us that the number of microbes varies considerably according to different places, and that between the air which one breathes from the top of the Pantheon, and that of our hospital wards, there is a great difference as regards the quantity of contained micro-organisms.

To those microbes introduced by aliments, and those which filter through the nasal and oro-pharyngeal passages in the inspired air, we must add those which develop in the digestive tube itself; and here in this connection, I must again refer to the curious experiments of Miquel, who, searching with all the rigor of Pasteur's culture processes to find what were the points of the economy which might determine the development of bacteria in nutrient culture liquids, showed, what one might have anticipated, that the lungs and the digestive tube are the only organs capable of determining a culture of microbes.

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As for the digestive tube, the activity of the cultures is much greater the farther you get from the stomach, and the nearer you approach the inferior extremity of the alimentary canal. Hence, then, from all that goes before, it remains settled that in the physiological and pathological state, fæcal matters and the contents of the intestines contain a great quantity of proto-organisms.

Passing now to the alkaloids of putrefaction, it is known, since the researches of Selmi which go back to 1872, that the name *Ptomaines* has been given to certain alkaloids derived from bodies undergoing putrefaction.

These ptomaines are found in considerable abundance in fæcal matters, and their origin, as well as the part which they perform in the economy, merit attention.

The idea which Selmi had conceived of attributing to putrefaction the production of the ptomaines which he observed, is not absolutely exact, and it seems demonstrated that certain animal alkaloids can be generated apart from putrefaction; the experiments of Prof. Armand Gautier are,in this respect, very convincing.

Before Selmi, Gautier had already shown that these alkaloids may come from modifications which are undergone by albuminoid matters apart from putrefaction; so, generalizing from this fact, he considers these alkaloids of animal origin as one of the physiological products of the living cell; and just as the vegetable cell makes alkaloids, such as quinine, strychnine, etc., the organic cell also, produces similar principles, to which Gautier gave the name of *leucomaines*.

Moreover, Tanret, in 1882, called our attention to this important point, which quite confirms Gautier's views, viz.: that the peptones give most of the reactions of the alkaloids.

Bieger has completed these researches in directly obtaining an alkaloid from the action of gastric juice on fibrin. In fine, it has been ably maintained that the micro-organisms may produce alkaloids varying according to the species of microbes observed.

To sum up, it is seen then that fæcal matters contain organic alkaloids having a quadruple origin; they may result from the putrefaction of absorbed albuminoid substances; they may take their source in alkaloids furnished by the living organism, according to the theory of Gautier; they may be due to the action of gastric juice on fibrin, according to Tanret's experiments; in fine, they may be the result of the presence of micro-organisms, which, as we have said before, exist in so great quantity in the digestive tube. We know by accurate physiological experiments the action of these ptomaines or leucomaines; we know that they determine in the living organism symptoms quite analogous to those that are produced by muscarine. They are veritable poisons of the heart, and you see developed in animals to which they, are administered, convulsive troubles and pupillary modifications.

In fine, there exist in intestinal matters products derived from fermentation, leucine, tyrosine, stercorine, excretine, indol, skatol, phenol, etc. If it be true, as Kühne has pointed out, that the two first of these bodies, tyrosine and leucine, may be produced apart from putrefaction by the action of one of the ferments of the pancreatic juice, trypsin; if stercorine and its derivatives take their origin in modifications undergone by the bile; indol, phenol, and skatol result, on the contrary, from putrefaction of nitrogenized substances introduced in the intestines.

So, then, it seems to be established on unquestionable scientific bases, that, in the physiological state, the intestinal contents include micro-organisms, organic alkaloids, and all the derivatives which result from the putrefaction of albuminoid substances.

More than this may be affirmed; and Prof. Bouchard, who was one of the first to attribute to all these phenomena their true semiological value, has shown that these putrescible substances may in certain circumstances not merely fail to be eliminated in the fæcal matters, but even penetrate the economy by the vast field of absorption which the intestinal mucous membranes afford them, and thereupon determine a symptomatic aggregate tolerably well defined, and very similar to what one observes in the different forms of anæmia, and to which he has given the name of stercoræmia.

From all the above we can draw this important conclusion: That man in the physiological state necessarily produces poisons, more or less virulent, and that the condition of health for him consists in their regular and rapid elimination by the different emunctories of the economy, and particularly by the kidneys and intestines; nor must I omit to mention the liver, which has for its function the destroying of a certain number of these toxic alkaloids. But let some circumstance come to interrupt this equilibrium—let the liver cease its functions; let the glomeruli of the

kidneys become obliterated; let too active an absorption take place from the intestines, whether by abnormal shedding of its epithelium, or by the presence of ulcerations, or by want of power on the part of the digestive ferments sufficiently to stay the production of phenomena of putridity—in all these cases there may ensue a pathological state for the relief of which we may be called upon to render assistance.

Humbert had already, in 1873, pointed out in his thesis the importance of these septicæmias, but it is to Bouchard that the credit belongs of having brought all these facts together into a pathological unity.

The physician can, and ought to, interfere to combat these intestinal septicæmias, and he attains this end in employing two kinds of medicaments—one kind which has for its object the prevention of putrid fermentations developing in the digestive tube, and of destroying the toxic elements which are found there; another which has for its end the favoring of the rapid elimination of these matters from the intestines. Let us examine each of these indications, and the indications designed to fulfil them, commencing with the last:

The indication to eliminate the toxic matters found in the digestive tube, and to favor their speedy issue, is fulfilled by purgation. I need not here occupy much time with the general subject of purgatives. I cannot, however, forbear remarking how strikingly the interesting researches on the putrid fermentations of the intestines harmonize with and justify the traditional medication of our fathers.

Substitute in fact for the words *peccant humors, atro-biliary humors*, the words *micro-organisms, alkaloids of putrefaction*, and you will understand the importance which the physician of the olden times attached to this group of medicaments, and you will better appreciate the language of the physicians of Molière's time, whose very phraseology the immortal comedian has transmitted to us in his *Malade Imaginaire*. It was not then to expedite from the system the bad humors of Monsieur Orgon that Fleurant employed the numerous apozemes prescribed by Purgon, but really (in modern language), to expel the putrid element which had developed there.

The group of purgatives already so numerous, has been enriched in the last few years by a vegetable substance with which we have experimented in our service, and which seems to possess a real efficacy. I allude to cascara sagrada, very much vaunted in America.

The cascara sagrada, or to speak more scientifically, the rhamnus Purshiana, is a shrub which grows in abundance on the borders of the Pacific in North America, and belongs to the family of rhamnaceæ, which has already furnished medicine with an energetic purgative, the buckthorn (rhamnus catharticus).

It was Bundy who in 1878 first pointed out the purgative properties of the rhamnus Purshiana, and Landowski was the first to introduce it into France.

The part employed is the bark which contains different resins which give to it its purgative action. This medicament is administered under two forms. The Americans employ especially a fluid extract in the dose of thirty to forty drops. In France we use chiefly powdered bark put up in the form of capsules, each containing about four grains. This dose generally suffices to produce one regular stool every day; when it is insufficient you can administer one capsule in the morning and another in the evening. The purgative effects thus obtained are quite satisfactory, and without partaking of the enthusiasm of certain American journals, I believe, nevertheless, that this new medicine deserves to retain a place in therapeutics between podophyllin and rhubarb as a remedy in habitual constipation.

Passing now to the true intestinal medication, *i. e.*, to the medicinal agents which are capable of modifying the putridity of intestinal matters, we find that these substances may be introduced by two channels; either directly into the intestines by means of enemata, or indirectly by the mouth. The antiseptic or aseptic substances which can be introduced directly into the intestine by way of enemata are not very numerous, and this is on account of the irritant and toxic action of most of them. The dangers which attend the free use of carbolic acid are well known, and to avoid such risks we are obliged to employ substances which are but slightly irritating, and toxic, such as salicylic acid (unfortunately little soluble), boric acid, and cupric sulphate. But the enemata which succeed the best in such cases, are those which Bouchard has long recommended and which consist simply of water in which a certain quantity of pulverized charcoal is suspended. For these clysters charcoal from poplar wood, prepared according to the directions of Belloc, is superior to any other; it forms in part with water an almost homogeneous mixture.

You suspend, then, in six ounces of water two or three tablespoonfuls of Belloc's charcoal powder, and administer the whole as an enema to the patient.

These injections have no toxic effect and they disinfect perfectly the contents of the large intestine. Their action is, however, local and extremely limited, so that when you desire to practice antiseptic intestinal medication thoroughly, you should endeavor to disinfect the entire intestinal tract, and for that purpose medicinal substances should be introduced by the mouth.

Among the medicaments worthy of being advised for this object, there are three to which I desire to call attention; namely, charcoal powder, iodoform and carbon-disulphide water. We have here again powdered charcoal, which is a good medicament, but which is attended with several inconveniences: first of all, the necessity of taking large quantities to obtain a sufficient disinfectant action; but there is a still more serious inconvenience that the charcoal powder, which certainly will deprive the stools of their bad odor, does not destroy the organized germs which are there.

Iodoform in this respect is much more active; it is not only a disinfectant but it is also powerfully aseptic. Unfortunately, it presents the inconvenience of being an active and irritant medicament. Whenever I have had recourse to it, whether in the form of granules of iodoform, or of capsules containing iodoform dissolved in ether, I have produced a speedy irritation of the stomach if I have desired to prolong the action of the medicament.

Therefore I much prefer the carbon-disulphide water, which I have employed with so much success in our hospital wards.

I give the name of carbon-disulphide water to the solution by agitation of disulphide of carbon in water. This agitation in water of pure disulphide of carbon gives a liquid possessing a strong odor of carbon disulphide and containing a quantity of the latter concerning which authorities are not agreed. So while Peligot fixes it at one drachm per quart; Ckiandi-Bey, on the contrary, believes that this proportion is four times too large.

This solution has a rather agreeable taste, and leaves a cool, fresh sensation in the mouth; mixed with milk or with wine and water, the taste almost entirely disappears. Allowed to stand in any receptacle, this water loses, little by little, by volatilization its disulphide of carbon, its taste, its smell and its properties: therefore, it is always necessary, in order to keep the solution of the same strength, to have a little undissolved disulphide of carbon in the flask.

This is our formula for this solution:

℞ Carbon disulphide 25 grammes.
Water 500 grammes.
Spts. peppermint gtt. xxx.
M.

Put into a flask of the capacity of seven hundred grammes, shake and let the mixture settle. Eight, ten, or even twelve tablespoonfuls of this water should be given per day, having care to pour each spoonful into a half tumblerful of wine and water, or of milk; the patient should be recommended also to replace the water in the flask as fast as it disappears by use. I add, to finish what pertains to this pharmaceutical preparation, that disulphide of carbon is of moderate price, so that this solution is quite cheap, costing only a few farthings per litre, and I come now to the physiological and therapeutical properties of carbon-disulphide water.

It is a matter of history that, since the writings of Delpech, who attributed violent toxic properties to this medicament, carbon disulphide was considered a dangerous medicament. We feared its action on the nervous system, *i. e.*, the paralysis (partial or general), the impotence, etc., which were ascribed to its use. External applications were, indeed, made in the case of wounds of a bad condition, and Guillaumet wrote an able paper on this use of the remedy. So when I commenced my researches on the disulphide of carbon, it needed the reiterated assurances of M. Ckiandi-Bey, who told me of the great chemical works in France and elsewhere, where they manufactured disulphide of carbon, and the two thousand operatives constantly employed in these works, none of whom ever experienced the least symptom of poisoning from freely handling this substance and breathing its gaseous emanations;—it took all this to decide me to make trial of it in my hospital practice. The experiments which I have made on animals with my excellent interne Sapelier, who is to devote his inaugural thesis to this topic, promptly convinced me of the innocuousness of disulphide of carbon, and since then I have constantly used the carbon-disulphide solution in the treatment of infectious diseases. By means of this water the stools are disinfected perfectly, and the infectious germs which they contain are destroyed, and under the influence of this treatment the infectious diarrhœas dis-

appear. For more than six months I have been giving this carbon-disulphide water in typhoid fevers, in doses of from 5 to 10 tablespoonfuls a day, according to the intensity of the diarrhœa, and I have obtained most satisfactory results from the point of view of intestinal antisepsis. Nor have I seen any untoward accident from its employment. It is understood that the sulphide of carbon has no action except in relation to the putrid phenomena taking place in the intestine, and that it can in no other way modify the course of typhoid fever, which is a general disease, of which the intestinal troubles are only one phase. But in addressing itself to this one marked feature of the disease, and in favorably modifying putrescent intestinal processes, carbon disulphide has been proved to be possessed of efficacy above all other medicaments.

CHLORATE OF POTASSIUM.

By Jos. Xav. Ziteke, M. D., Napoleon, Ind.

MANY of the readers of the Gazette may have had ample occasion to have observed a specially malignant type of diphtheria, to which they were called either in consultation, or after the dismissal of another practitioner, or sometimes, after the parents or relatives of the patient had undertaken the treatment on their own responsibility and found the child dying under their hands.

This type of diphtheria, was usually, till some years ago, considered as very malignant and explained by a special state of blood-crasis, because all the other local or constitutional symptoms did by no means agree with the "status quo" of the original disease.

I, also, was called some years ago, whilst practicing in Spencer Co., Ind., to a case of this kind, which made such a deep impression on me, and the symptoms of which I could so little understand, that it became so deeply impressed upon my memory, as to make me watch carefully every case of diphtheria falling into my hands. The case was this:

The patient was a boy five years of age and the only son of a well-to-do farmer. About a week previously he became sick, and the family doctor pronounced it a case of diphtheria. The doctor did his best, yet as time went on, it was observed, that though his throat was getting better, yet the general state and feeling of the child grew worse.

The doctor being asked to give his opinion, pronounced it a case of malignant diphtheria (black diphtheria), in which the blood was poisoned, and that the child must die.

The consequence of this unfavorable prognosis was that he was dismissed immediately and I sent for.

Arrived at the house I found the child in the following state: The tonsils were little swollen, of dark brown color and some spots covered with dark, dirty, greyish diphtheritic patches. On the fauces and soft palate, down to the epiglottis (as far as was possible to see) the same dark brown color of the tissue was visible; the diphtheritic exudate, however, varied considerably in color and shape. On some places it was a thick, dirty, greyish substance, of considerable extension, on others it was again of a white color and hardly bigger than a lentil. The whole appearance of the throat and fauces had not the common type of dangerous diphtheria, *i. e.*, of diphtheria leading to death, but resembled rather a case where the diphtheritic process was approaching gently its end, and the tissue beginning to get rid of the membrane. Only the dark brown color of the tissues seemed at that time strange to me.

The physical state of the patient was quite bad. The pulse was quick and weak, about 120 a minute, the temperature, however, was but half a degree above the normal. The respiration was 30 in a minute. The boy was very weak, and lying in a stupor, from which it was difficult to awake him. The epidermis was of a slight yellowish hue, whilst his hands, though cool, were covered with a sticky, badly smelling moisture. A considerable fœtor came from the mouth. The urine was of a dark brown color, similar to that of the fauces, with thick sediments: chemical tests revealed traces of albumen and blood. Various small black kernels were observed by a magnifying glass amongst the sediment, some as large as a small pin's head, others not larger than the point of a needle. Since two days he had no appetite whatever, and it was very difficult to make him take the medicine and necessary nourishment, consisting of beef-teas, milk-punch, etc.

This strange case was quite new to me and I could by no means bring it in connection and unison with the many cases of diphtheria I saw in my practice and in the hospitals. Was it indeed diphtheria that produced this condition of coma?

I asked the father to send immediately for the attending physician, as I wished to know all I could learn of this case. The

doctor came in a short time; he told me that the boy was sick about a week, was considerably better about three days before, but the day before I was called grew worse again, having fallen in this state from which, according to his own experience, nobody could save him from death. The treatment was both local and constitutional. Locally chlorate of potasium was given, in a solution, both as a gargle and internally; and constitutionally he had used ferri et quininæ citras in solution, whiskey, beef-tea and milk.

Such was the statement of the doctor, nor was it possible to raise any objection against his treatment. The internal mixture of chlorate of potassium was, or seemed, rather strong, as a good quantity of the drug was by no means dissolved, but merely suspended in the menstruum. But, chlorate of potassium was considered as an innocent article both here and in Europe, and many of the standard authors on the pharmacopœia say plainly that "no nicety is to be observed as to the doses" (See Wood's Dispensatory, Schroff, Pharmacopœia, chlor. of potass.). Nevertheless, as I never believed much in the efficacy of the drug in question as to the diphtheritic process, we stopped its internal administration and continued only the gargle mixture and a tonic. The stimulating treatment was continued and changed from two hours into an administration every hour.

At nine o'clock p. m. I saw the patient again, but found him in a yet worse condition. It was evident that the end was at hand. He was lying in a comatose state; his pulse was quick, though very weak and thready, so that it was nearly impossible to determine its frequency. His skin was cool and dry, so were his tongue and lips, and the latter were covered with small patches of dark-brown color, resembling, as to their form, the herpetic eruption of pneumonia. He voided his urine involuntarily and had also two or three uncontrolled operations of the bowels. The spots on the bed-clothes from the urine were dark brown, and had a very strong, disagreeable smell.

It was evident from all these symptoms, that the patient was past all human aid, yet, lest it should be said that we did not do our duty, we proceeded at once to stimulate the organism both with external and internal methods. After an hour of rather exciting work, even the heart-sick parents were obliged to recognize that all human science was of no avail, and that to trouble the patient longer was mere cruelty. And indeed, two hours later, after having had yet one more copious operation, the child was found dead. Indeed, even his mother could not say when the child died, so much did the comatose state of several previous hours resemble the last sleep of death.

This case, so different from the usual course of diphtheria, made a deep impression on me, and for some time later, I looked in all the best authors on diphtheria, but could find no other explanation than that given by my colleague at the bed-side of the dying child.

Meanwhile, about two years later, I saw another such case, whilst visiting a friend in Covington, Ky. The symptoms were exactly the same as mentioned above and so was the exitus lethalis; and what is yet more important, I found that the child had been subjected to the identical treatment as the previous one, and that chlorate of potassium was given again in such a strength, as to be merely suspended, and not dissolved, in the menstruum. However suspicious this may have seemed to be to every careful observer, the unanimity of all authors that chlorate of potassium can be administered without nicety must have disarmed all close suspicions.

One year later I saw a third case in a college in Pennsylvania, where a boy died of diphtheria after having been sick for three or four days. When I saw him, it was clearly visible that the carbonic acid poisoning had begun, as his face, lips, and nose bore the evident signs of cyanosis produced by CO_2. Yet I thought that tracheotomy should be tried, and for that reason called another physician, very much respected in that neighborhood, who, however, considered it useless to operate, as the diphtheric process had penetrated down into the trachea and perhaps the bronchi. Some remedies were administered but at 11 o'clock A. M., that is about an hour later, the patient died in a perfectly comatose state. After death, *i. e.*, twenty-four hours later, he was observed to have changed color; his lips were dark brown, so the interior of his nose, and the visible epidermis of his body had a darkish yellow tint.

About six months later I met some students of the same college, who told me that the young man who died last year so suddenly, had for a few days been taking three times a day one-half tablespoonful of chlorate of potassium, and only then, because he did not get better, went to the infirmary, where he died twenty-four hours later.

Since that time, I saw in my neighborhood one similar case of this kind of diphtheria,

ending in death and accompanied by the same symptoms as related. Here also chlorate of potassium in excess was given.

It was at this time that I received the first positive confirmation of the truth of my suspicions as directed towards the chlorate of potassium. It was the article of Marchaud and that of Tacke, who both stated that chlorate of potassium, given in excessive doses, is a dangerous, poisonous drug, and attracted to it the attention of the general profession. I found, also, that already in the year 1858 Dr. Fountain, of Davenport, Iowa, was poisoned by one oz. of chlorate of potassium, which he took for the sake of experimenting with it. (See *Amer. Med. Times*, 1860.) Some time afterwards there appeared also the report of Dr. Hall of the death of a boy of one year, after having taken altogether forty grains of the drug.

Last year a new and explanatory dissertation was held about this matter before the academic senate of the University of Vienna, by Dr. Zillner, assistant in the institute of criminal and judiciary medical examination. (See *Wiener Medic. Wochenschrift*, No. 34, 1884.)

The conclusion arrived at by all these gentlemen was that chlorate of potassium is by no means an innocent drug, and that special care must be taken in prescribing it, and that the people at large should be warned and made attentive in regard to the risk they incur by taking a large quantity of the drug. All experiments, chemical and pathological, proved the poisonous qualities of chlorate of potassium.

Thus, if blood is taken from a body after death and placed in a test-tube, and treated with a saturated solution of $KClO_3$, the dark, blackish color of the blood will be changed into a bright, crimson red. The same effect is reached also if we force atmospheric air into the blood, either by shaking the tube violently, or by introducing it below the different strata. This phenomenon explained by words, signifies that the blood of the dead body, deoxidized by its surrounding tissues, becomes oxidized again by the atmospheric air, or the concentrated solution of chlorate of potassium.

Thus it would seem, that the drug is giving O to the blood, yet if we allow the above-made solution to stand quietly for one or one and one-half hours, we shall find a very contrary phenomenon. The whole fluid is changed entirely, and instead of a bright, carmine color, presents a dark, brownish hue. If subjected to spectral analysis, it shows, indeed, both the oxyhæmoglobin striæ (bands), but also another one of deep red color, which becomes thicker and far more easily perceived if the mixture had been standing for three or four hours, before subjected to examination, and the more concentrated the solution used. By-and-by both the oxyhæmoglobin striæ disappear, the blood becomes thicker and deeper brown colored, and nothing but the single thick, red stria remains. All these changes take place two or three hours later, after the concentrated solution of $KClO_3$ has been mixed with the blood.

If we shake now this mixture, or introduce air between the strata, we will observe that its color will always remain the same, *i. e.*, that it will remain deoxydized. This fact is of very great importance, as it shows that blood, which contains a certain quantity of $KClO_3$, does not only lose its O, but also loses the faculty of absorbing it from other tissues or organs, and by that process of deoxydation another body is formed, which is called the methæmoglobin. This body, detected in the red striæ of the mixture, is formed, not only by chlorate of potassium, but by all substances, which yield readily their equivalent of oxygen, as, for instance, hypermanganate of potassium, nitrite of amyl and an injection or absorption of the nitro-oxide of sodium. Everywhere where it is found it becomes a pathological sign, that the substance in question has lost its affinity for oxygen. (See the works of Hüfner, Rülz, Selligmüller, etc.)

As to the pathological changes, revealed by post mortem examination, of persons poisoned by $KClO_3$, they are given by Dr. Zillner as the following:

The color of the skin of the corpse is of light-greenish or sometimes brownish color, with many dark-brown spots. The internal organs present also uncommon changes. The blood is very thick, of dark-brown color, or changed into a half-fluid, pasty mass of sepia hue. The spectroscope reveals in either kind the characteristic methæmoglobin striæ, which are sometimes accompanied by those of oxyhæmoglobin, sometimes without them.

The chemical analysis of the blood reveals nothing specific; the ratio between the red and white blood-corpuscles is neither disturbed, nor the form changed, if the examination is well and quickly conducted. Some of the observers found microcyti in the blood, but Dr. Zillner found none.

All the important organs of the body have the same color as the blood, which fact is

most conspicuous upon the external surface of the brain, where various blood-points appear of sepia color.

The lungs and heart, except the change detected in the blood, reveal nothing of importance, whilst, on the contrary, the urinary organs show a considerable degree of abnormality. The kidneys, if cut, present upon their surface very fine, thin, black lines, which agree entirely with the canaliculi uriniferi. They run in a straight line, down from the top of the pyramids to their bases, where they become less conspicuous, till finally, they cannot be distinguished at all. The cortical substance presents also various changes. Many of the canaliculi (vasa urinifera) are, from their beginning, from the malpighian bodies, full of small corpuscles of cylindrical shape, which consist mostly of red corpuscles isolated, or united together in various shapes and forms, and, finally, of peculiar, small black kernels. The epithelium is normal. In the bladder the same substances are detected, unless a long sickness has destroyed them by decomposition.

Now as to the doses which may produce the poisonous effect, they vary with age and personal disposition and sensibility; so much being sure, that some persons seem to have a special idiosyncrasy for chlorate of potassium, as for opium and other drugs.

Thus, as I have already stated, Dr. Hall reports a case of poisoning of a child of one year, by a dose of forty grains; Dr. Smith reports another case of a boy four years old, where the total amount given was no more than two ounces and fourteen grains, and Dr. Jacobi, of New York, considers as the utmost safe dose the following: For a child under one year, twelve to fourteen grains; to those of from three to four years, twenty-eight grains; and to adults, one and one-half ounces per diem. It seems also that the poisonous effect of the drug depends much upon the condition of the stomach; an empty stomach being far more susceptible to it, than a full one, or at least one filled with some amylaceous substances. (See Selligmüller, Ueber das Chlorsäure Kali.)

In conclusion, permit me to state that some of our medical papers still publish shot-gun prescriptions, containing this drug in such an excess, as if they had never heard that its former innocence was considerably questioned, and that it is in all such cases the duty of an educated physician to keep on the safe side, because, though he may do much to help the patient out of the world, he can do absolutely nothing to bring him back again.

NEW REMEDIES.

By R. H. Culbertson, M. D., Brazil, Clay Co., Indiana.

NEW remedies have within the last few years sprung up in tropical profusion, and in a pretty large proportion of the papers in the medical journals introducing them they have been recommended in extravagant terms. While some of them have already an assured prominent and permanent place, others no doubt under the scrutiny of professional experience, proving to be of little or no value, will be eliminated. The faculties of the human mind are so distinct, and in some sense so independent of each other, that puerile credulity is not inconsistent with the ability to write a brilliant article. As a matter of fact, men so constituted are very often much above mediocrity, and sometimes this characteristic seems to inhere in men of preëminent abilities. Obviously such men, while they may shed much light upon the occult paths of science, may be exceedingly susceptible to imposture and in turn become themselves blind leaders of the blind.

However honest, however excellent a writer may be in other respects, if he happen to be one of those who appear to be incapable of distinguishing between an antecedent and a cause, or something subsequent and an effect, his conclusions may safely be considered as nothing better than "sounding brass or a tinkling cymbal." Again, the writer may be one of those for whom the word eureka hath surpassing charms, the sound of which to him is like the voice of fame, and in the absence of the genuine article inclines his ear as to enchanting music. There is ample room and opportunity for the introduction of new remedies, but there should be good common sense and discretion exercised in recommending them, and especially in the application or practical use of them. The history of therapeutics fully illustrates the disposition to attribute good effects to medicines on insufficient evidence, and the grand success of new remedies claimed by some papers on account of one or two examples of apparent success are by no means to be accepted as conclusive.

In diseases where all the old remedies have hitherto proved futile, it is appropriate

in an article to suggest the trial of new ones upon evidence by no means conclusive of their superior merit, provided it is sufficiently known to give assurance that their effects shall not be detrimental. Before suggesting or recommending new remedies for the large class of diseases (though they may be self-limited) for which there is an established mode of procedure in which certain old remedies are conceded to be of more or less efficacy; or before practically substituting the new for the old in such cases, it would be well to consider the responsibility thus assumed. Every sick man, every patient has a right, and does most reasonably expect his case managed in the best way, and to be given the best and most approved remedies known to the profession; and the physician who permits himself to be seduced from pursuing such a course is unworthy of the confidence reposed in him by a confiding patient.

It should be an invariable rule, in recommending a new medicine, to give a more or less complete history of the cases in which it has been given, and also an accurate account, *seriatim*, of the quantity, manner and times of giving the medicine; then may follow an opinion, or conclusion, with much propriety, because the reader may then have an opportunity of exercising his own judgment. It is remarkable how often, in partial accounts of cases and treatment, there is enough developed to partially, if not completely, neutralize the conclusions. For example, the new medicine introduced for the *cure* of some self-limited disease, is said to have been given, in certain quantities, at specified times, and the patient makes an admirable, a splendid recovery; and the writer therefore, in his beneficence, hastens to make known such a valuable new medicine (or new use of one or more old ones, it may be); but as far as appertains to the giving of drugs at regular periods, or for any other purpose than that of rendering the patient as comfortable as may be, the reader may find himself utterly incapable of seeing anything more in the history of the case than that the disease has simply run the usual course and terminated in a recovery, as is usual under the recognized and established use of the old remedies, and as, perhaps, a large per cent. of such cases might do under the expectant course. In other cases, the new remedy is given either in combination or alternately with one, or perhaps several, of the medicines or preparations habitually given, with more or less confidence, in such cases; when, after such favorable result, as would by no means astonish but would be unquestionably anticipated under the use of the medicines habitually given, the writer in his enthusiasm proclaims a triumph for the new remedy, in which he may be very honest, but in which in his partiality for the new remedy he has evidently lost sight of the old ones, as well as the nature of his case. But new remedies are by no means to be despised, for it is quite possible that many valuable additions will yet be made to the materia medica. But new remedies, like new recruits to the army, should be properly handled. The new recruits, with newly-commissioned officers, may serve well to illustrate "the pomp and circumstance of glorious war;" but while this may fascinate the inexperienced, the competent commander will not be easily persuaded to place such new acquisitions in the posts of danger and honor, to the exclusion of those who are more familiar with the army and the battle; and so the experienced physician *ought not*, the competent *will not*, abandon the tried and valuable, to adopt the new, on no better evidence of their superior virtues than the mere opinion of one who has tried them in a very limited number of cases, however highly he may recommend them, and though he may enjoy an excellent reputation. But what assurance have we that the inexperienced, as well as the morbidly credulous, may not be influenced by them, to the detriment of their patient, as well as their own reputation? It is well not to indulge in too much enthusiasm in recommending new remedies; for while, as already mentioned, they should command a share of attention, there is, in my opinion, fully as good an opportunity to advance therapeutic knowledge by studying and discussing the newly discovered or less-known activities of medicines which have long been in use. And it occurs to me that the occasional appearance of papers of such sort in the medical journals might be acceptable and of practical utility, besides having a salutary effect as reminders that the new remedies, to say the least, are not the only ones. Specifics are highly desirable—the very ultima thule—of therapeutic efforts. But, if we may judge the future by the past, how long would it take to secure a supply of such remedies adequate to the demand? How, indeed, while we remain so utterly ignorant of the primary—the essential cause of disease, can we even so much as make an intelligent effort to discover remedies

that shall act directly upon these intangible —these unknown, yet potent agencies for harm? But, if we know so little of disease as a cause, we have, nevertheless, become the possessors of a wealth of knowledge of pathological as well as physiological processes. If we may not know the enemy, we may become familiar with his modes of attack and the result upon our patient, so that, if we may not destroy the enemy, we may fortify against him and successfully stand a siege—we may pursue a rational empiricism in the use of old or new drugs, according to the known power which they may have for modifying either the organs or tissues, or the capabilities, or susceptibilities of either. And in reports of new remedies, it is their power thus to modify or control which will be of interest and value;—facts are evidence, while conclusions may differ, even when drawn from the same premises. Competent physicians are more scientific than lawyers (they need of necessity to be); then let the medical profession be, at least, as logical as lawyers are, for how long would a witness, in a respectable court, be permitted to give evidence in language expressive of conclusions of law? The last quarter of a century has brought to us many valuable remedies. Hydrate of chloral fills a place that had been vacant before its introduction. If pain is to be alleviated or a tranquilizing effect desired where there may be hyperæmia of the brain, if it shall be found sufficiently potent, then it will be clearly the better remedy, and as a simple hypnotic it, perhaps, has no equal. The bromides have, perhaps, been over-rated as *curatives*, but the fact remains that they are powerful nerve sedatives. Since the publication of Straub's statistics of results after using salicylic acid, it has been extensively used with corroborating results. It may be considered by some persons a specific for acute rheumatism. But what is acute rheumatism? Do we really know anything more of the therapeutic effects of the salicylates than that they relieve pain, probably by acting upon the nerve centres? It was not the intention in this article to write up any particular medicine, or to catalogue new ones, but before closing I want to notice one other. Iodoform has become popular with the profession as an application to chancroids and other sores. So far as I have tried it in chancroids I have found it unnecessary to use anything else, and I have been especially gratified by its effects in old and indolent ulcers. Last summer I was called to see some cases of Dr. Thomas' of Knightshead, in consultation; they were suffering from epidemic and extremely asthenic dysentery, a pretty large percentage of cases (treated by the different physicians during the epidemic) proved fatal, and the recoveries had been interrupted and tedious.

After having seen those cases in consultation, I was called to see other cases of the disease which I had charge of myself, some of these cases also proving obstinate and intractable. It occurred to me that if iodoform acted so kindly and stimulated chronic and indolent ulcers of the skin to healthy action, it would at least be a reasonable experiment in such an emergency to try what efficacious effect it might have upon an unhealthy condition of the rectum. I used it by enema in mucilage of starch. It is true, the epidemic was on the decrease, but in the cases in which it was used the effect seemed to be relief of pain and tenesmus, and with much more lasting and permanent results than with the opium alone. I had not then, nor have I since, seen any account of iodoform having been used in such cases, and the little experience I have had with it being very satisfactory, or gratifying, rather, I am the more desirous of giving it to the profession; thinking, perhaps, under proper circumstances, it may receive further trial, and that its seeming good effect in these cases of mine may be corroborated by others, and hoping that it may ultimately be confirmed by the many.

THERAPEUTIC INDICATIONS FOR THE USE OF THE PILL IRISIN COMP.

By E. Chenery, M. D., Boston, Mass.

I HAVE used many of the above pills in the belief that they are valuable under many circumstances. Sometimes the indications are chiefly for the strychnine they contain; sometimes for the irisin, and sometimes for the podophyllin. As an ordinary cathartic they have too great a proportion of strychnine for their physicking quality. They are however very serviceable in the cases which are frequently found when there is a mild, habitual sluggishness of the bowels. When a decided cathartic effect is desired, they can be joined with advantage with some pill of the necessary quality. They are also useful when given in connection with iron or other constipating remedies, to counteract the tendency to constipation.

Both the podophyllin and the irisin, or iridin, as it is otherwise known, are regarded as

appropriate in hepatic cases; yet we are immensely at sea as to what is to be understood by hepatic cases, since, as we believe, there is not another considerable organ in the body, which, in our latitude, does its work so faithfully and evenly as the liver. It is often made to suffer, however, by being in bad company, for whenever there is a show of biliousness, the liver is at once set upon Now we ought to consider before we pass on, that a very considerable portion of the cases of biliousness are hæmatogenic and so have nothing to do with the liver. Again, inflammations of the duodenum,which are common, as well as inflammations of the common duct, and of the gall bladder itself by their obstruction to the flow of the bile, are the most frequent cause of biliousness. Here, again, the liver is not to blame. So gall-stones, and even obstructions in the hepatic vessels which discharge the bile into the gall-bladder, are not infrequently at fault, yet in our blindness, we blame the liver as though it was the cause of all, and ply it with hepatic remedies. When we have duly considered all these sources of biliousness, we shall find that the fault can rarely be laid to the charge of the liver. For one, I believe that but few of the many cases of biliousness for which the liver is regarded as the seat are hepatogenic at all; and, were I the liver's advocate, I should plead most earnestly for a review of the whole subject, with the hope of rolling back the wholesale blame now heaped upon it, and stopping off the tide of "liver remedies" now sluicing upon it.

If, then, with whatever direct effect these two remedies have upon the secreting works of the liver, we regard them as of special service in overcoming duodenitis and other inflammatory obstructive diseases in front of the liver, we shall administer them with equally good effects, and, as I believe, with much clearer and truer ideas of the pathology of the cases.

There is a class of cases over which this particular combination has proved very effectual in my hands. I refer to certain forms of headache, and I have by it accomplished what I and others have not been able to accomplish by any other remedy. As an illustration:

Miss McF., aged 26, dressmaker, a spare, pale, nervous woman, came where I was serving and threw herself on the lounge saying: "O dear, doctor, I wish you could cure my headache!" I said: "Perhaps I can." "I don't believe you can, for I have doctored so much for it, I am discouraged in trying any more." This woman was "fast," and quite anæmic and did not get the amount of sleep she ought to. Her appetite was poor and fitful and her bowels sluggish. To be short, I prescribed the pills for her, and did not hear from her again for some time, when I came across her on the sidewalk and learned that the pills took away the headache, and it had not returned.

So for another example, a man somewhat pale, working as a printer, suffered many weeks with headache and took various cathartic and bilious medicines without effect. These pills cured him.

Now I believe that it is not simply the antibilious effect of these pills that cures such cases, but that the medicine has some special influence upon the nerves, independent of the laxative effect. Either the strychnine or the irisin comes to the front in these cases and the desired result is obtained. As a headache medicine, is some cases, these pills surpass anything else I know.

There is no question, however, as to their irritating and nauseating effects upon the stomach, so that one at a time is about all that can well be given. Perhaps the quantity of strychnine will prevent a larger dose than two, which is the most I have ever given. One pill night and morning for two or three days, with one at night or in the morning afterwards is my usual dose. I believe the combination to be very useful, but I also believe that the pill would be greatly improved, especially for administration at bedtime, if one-half a grain of extract of hyoscyamus was added to it. If this were done, I should use many more of the pills than I now do, since it would not hinder their good effects, but would modify some of their ill-effects.

COCAINE HYDROCHLORATE IN OTALGIA DUE TO CATARRHAL INFLAMMATION OF THE EAR.

By Henry Reder, M. D., Aurora, Ill.

AFTER treating a case of severe otalgia with all ordinary remedies, including the hot-water douches, leeches to the tongue, and paracentesis of the membrana tympani, without much relief, I thought of cocaine hydrochlorate. I inserted into the vial of the atomizing tube of a Codman & Shurtleff steam atomizer a four-per-cent solution, and advised the patient to fill her mouth with the spray, close her lips, expand her cheeks, and so force the vapor into the eustachian tubes;

this was repeated at intervals of three minutes. I then adjusted the nasal tube of the atomizer, inserted it into the external auditory meatus, and also sprayed the external canal at intervals of three minutes. After fifteen minutes from the last application the patient was wholly relieved, and passed a comfortable night.

FEB. 11, '85.

NOTE ON ANTIPYRINE.

BY JOHN K. MITCHELL, M. D.*

ANTIPYRINE has been used in the medical wards of the Hospital of the Protestant Episcopal Church in this city, with almost uniform success, during December, 1884, and January, 1885. I have tabulated the cases under my charge, as resident physician, for Dr. Morris J. Lewis, and Dr. Henry M. Fisher—fifteen in all. Six were cases of typhoid fever, three of advanced phthisis, one of incipient phthisis, two of pneumonia, and one each of intermittent fever, dysentery, and traumatic fever following an operation. The dose usually given was fifteen grains of antipyrine, in syrup of ginger. Sometimes this was repeated at the end of an hour. A few times twenty-two grains were ordered, and once thirty grains were given, followed by fifteen after one, and fifteen again after two, hours from the first administration. In this case violent sweating, disturbance of the rhythm of the heart, and persistent vomiting, lasting for twelve hours, occurred. Upon no other occasion did I note any more unpleasant effect than somewhat free sweating. Only twice did the expected fall of temperature not happen, or not persist. I did not observe that a more rapid or more persistent decline of fever resulted from the large than from the lesser doses. The antipyrine never seemed to have any effect on the ordinary course of the fever.

It was used, besides the cases noted, in several of slight fever, of which I made no especial notes. Most of the temperatures were taken at the end of four, some at the end of five or six, hours, as well as after the lapse of three hours, always (except as stated above) to find the lower temperature permanent.

Case Number.	Disease.	Quantity used.	Temperature when given.	Temperature in 1 hour.	Temperature in 3 hours.	REMARKS.
1	Advanced Phthisis.	Gr. xv.	103.°	100.5°	....	
"	"	"	102.	97.	97°	
2	"	"	102.5°	....	98.	
"	"	"	100.	99.	....	
3	Incipient Phthisis.	"	103.	....	100.	
"	"	Gr. xv; repeat in an hour.	103.5	102.2°	98.5°	Normal temperature in 4 hours from first dose.
4	Typhoid Fever.	Gr. xv.	101.5	98.	. ..	Free sweating.
"	"	"	101.	99.5	. ..	Free sweating in ½ hour after taking.
"	"	"	101.	98.	98.5	Free sweating.
5	"	"	101.	99.	....	
"	"	"	100.	98.	....	
"	"	"	102.5	100.	99.	
"	"	"	102.5	...	99.6	
"	"	"	101.	....	98.4	
6	"	"	103.	104.	104.	
"	"	"	103.	....	101.	
"	"	"	101.4	....	100.	
"	"	"	102.2	.	100.2	
"	"	Gr. xxii.	102.2	....	99.5	
"	"	"	101.	...	99.	
"	"	"	101.5	100.	99.	
7	Int'rmittent Fever.	Gr. xv.	102.5	...	100.	
"	"	"	103.	...	99.6	Temp. not taken till 6 hours after administration.
"	"	"	102.	....	99.4	
"	"	"	101.	....	98.5	
8	Typhoid Fever.	"	103.5	....	100.	
"	"	"	102.5	100.6	100.	
"	"	Gr. xxx., and gr. xv one and two hours after.	103.5	....	101.5	Free sweating followed the second dose.
"	"	"	103.5	101.	100.	Pulse increased in force and became slightly irregular. Sweating and vomiting for 12 hours after.
"	"	Gr. xv.	102.	....	100.	
9	"	Gr. xxij.	101.5	100.	98.5	
"	"	Gr. xv.	102.	....	100.	
"	"	Gr. xxx.	101.	100.	102.5	This was a morning temperature—1st temp. at 9 o'clock, 2d at 12 o'clock M.
"	"	Gr. xv.	102.	....	99 5	Evening of same day.
"	"	Gr. xv; repeat in an hour.	101.	99.	98.5	At the end of the fourth hour had fallen to 98°.
"	"	"	101.5	99.5	99.5	
10	Pneumonia.	Gr. xv.	101.5	99.	99.	
"	"	"	101.	....	98.	Slight sweating.
11	"	"	102.	....	98.5	Both this and the previous case were slight pneumonias.
"	"	"	102.	....	98.	
12	Pyelo-nephritis; after incision and insertion of the drainage tubes in kidney.	"	102.	100.	99.7	This patient especially expressed himself as relieved of his "feverish feeling" after taking the medicine.
"	"	"	102.	....	98.6	
"	"	Gr. xxij.	102.	...	98.5	
"	"	Gr. xv.	102.	100.	99.2	
13	Dysentery.	Gr. xv.	101.5	....	100.	
14	Advanced Phthisis.	Gr. xv; repeat in one hour.	103.5	102.2	98.5	Last temp. taken 4 hours after 1st dose.
"	"	Gr. xv.	103.	....	100.	
15	Typhoid Fever.	Gr. xv; repeat in one hour.	101.5	99.5	99.5	
"	"	"	103.2	102.2	99.6	
"	"	"	102.5	101.5	101.	
"	"	"	102.5	101.	99.	
"	"	"	102.5	101.5	97.5	

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Leading Articles.

CAFFEINE.

A DRUG which offers at present a good field for study, and to which we desire to direct the attention of our readers, is caffeine. We have but little positive knowledge as to its exact action and value, but sufficient evidence to demand further trials.

When caffeine is given to the frog in poisonous doses, it produces primarily muscular weakness and relaxation, with disturbances of respiration, succeeded by violent tetanic convulsions, and, finally, death. Various experiments have been made to determine the methods in which it acts upon this animal, but with somewhat contradictory results. The recent researches of Leblond indicate that at least some of these differences depend upon the size of the dose. It appears to be now well proven that the alkaloid has an action both upon the spinal cord of the frog and also upon the muscles themselves. It is well known that a peculiar muscular rigidity is produced by it, and some years since Johannsen pointed out that when the caffeine is hypodermically injected, as it diffuses itself, rigidity spreads from the point of injection, from muscle to muscle; and Voit has determined that the development of the rigidity is not prevented by section of the nerve. Both the paralysis and the muscular rigidity are a result of a direct action of the alkaloid upon the muscle. The elaborate studies of Leblond seem to prove that there are at least two stages of the action of caffeine upon the frog. In the first of these the muscular excitability is exaggerated, and a momentary excitation of the nerve is followed by a prolonged tetanic contraction. The final stage is that of rigidity and lost excitability. The action of caffeine upon the muscle is readily demonstrated by throwing an isolated gastrocnemius into a one-per-cent. solution of the alkaloid; in from two to three minutes the muscle becomes swollen, round, stiff, and unable to respond to the galvanic current. That it is the muscle fibre which is affected is shown by an experiment of Pratt, who found that when an isolated muscle is soaked in a solution of curare until the nerves are killed and then thrown into a solution of caffeine, the usual rigidity is developed. Johannsen states that when a muscle under the microscope is touched with caffeine, its fibres can be seen to contract to half their length. It is hardly necessary to call attention to the similarity of this effect with that produced by veratrine.

Both Pratt and Leblond have found that section of the cord higher up does not prevent the convulsions in the frog; they are therefore not cerebral. Both Pratt and Leven also found that destruction of the spinal cord prevented the appearance of the convulsions, so that probably caffeine acts as a spinal stimulant. The results of various experiments show that the motor nerves are not affected; but there is some reason for thinking that the alkaloid stimulates the sensory nerves. Leblond first noted marked hyperæsthesia in the frog, and according to Rumpff insensibility of the skin can be demonstrated in man under the influence of caffeine. In the experiment of Pratt, when the left sciatic nerve of the beheaded frog was surrounded by a paste of Theine and water for ten minutes, a slight irritation of the foot produced reflex movements, but failed to elicit response when applied to the left foot.

The most important action of caffeine is, however, in connection with the circulation; unfortunately we have no careful studies of its effect upon the pulse in healthy man. One case of poisoning by it has been reported by Routh. A man took a drachm of the pure citrate. The symptoms developed at once. They were

burning in the throat, giddiness, faintness, nausea, numbness and tremor of the extremities; distinct pain in the stomach and bowels, profuse diuresis, and, finally collapse, great cardiac oppression, and icy extremities. Consciousness was not impaired, and headache did not develop until the patient began to recover.

Both Leblond and Professor Riegel are in accord in affirming that given to healthy man in the doses of from half to one gramme hypodermically, caffeine causes a distinct, but not very pronounced increase in the arterial pressure. Professor Riegel especially made an elaborate study of its action in a number of cases of disease, including valvular heart disease with failing compensation, myocarditis, fatty heart, nephritis, adynamic pleurisy, etc. He states as his conclusion that caffeine is a heart-regulating drug in the sense of digitalis, and that it increases the force of the heart, lessens its irritability, and increases the arterial pressure: that it acts very powerfully and quickly in increasing the flow of urine, and is capable of fulfilling all the indications to meet which digitalis is employed: that it separates itself from digitalis in acting much more quickly, and having no cumulative effect: that it is best given in repeated small doses, and that he has seen it successful when digitalis had failed. These conclusions have been substantially confirmed by Dr. Beecher, who states that it has more influence in lowering the pulse rate than is affirmed by Professor Riegel: that it deserves to be placed in the first rank among diuretics. In a few of Dr. Beecher's cases, owing to idiosyncrasies, it caused headache, great vertigo, and vomiting, and had to be withdrawn. Dr. Beecher gives from eight to thirty grains of the pure citrate in the twenty-four hours, beginning with a small quantity and rapidly increasing until the desired result is obtained.

In the number of the *Medical News* for January 21st, 1885, Dr. E. T. Bruen has a paper in which he reports five cases of various forms of heart disease, some of them valvular, and some of them simply of the walls, in which excellent results were obtained by the use of caffeine. He claims, however, that whilst caffeine is a powerful cardiac stimulant, it does not act as a cardiac regulator, as digitalis does. It is not very clear what he means by this, but probably he intends to convey the impression that it does not lower the pulse-rate as much as does digitalis. He considers it superior to digitalis in cases of extreme cardiac diseases whether of the valves or heart walls. In his experience the objections to its use are the gastric irritation, pain and vomiting which it occasionally provokes, and which may be avoided by the hypodermic administration. These disagreements with the stomach must, however, I think, be very rare. I have myself used caffeine to a limited extent in excessive cardiac diseases, especially in dilatation with presumed degeneration of the walls; and have seen most marked effects from it. To my thinking, it bids fair to be one of the most useful of drugs. Disagreements of the stomach and failure of good results may be expected from impurities in the article as kept in our drug stores. In one case under my care the patient was put upon Merck's caffeine with the most favorable results. The caffeine was then changed for an article purporting to be pure, and sold at one of the most prominent of our Philadelphia drug stores. It was noticed, however, that the specimen lacked the peculiar silky lustre which is so prominent in the pure caffeine, and it failed entirely to maintain the good which had been achieved. When, however, the Merck's caffeine was resumed, the bad symptoms were, for the second time, immediately ameliorated. There is no difficulty whatever, in administering the caffeine in powder, enclosed, if it is desired, in capsules or in "*cachet de pain.*" Or the caffeine may be readily made into pills.

It is said that most of the soluble salts of caffeine are decomposed in the presence of water, and are, therefore, ineligible for hypodermic use; the double benzoate of sodium and caffeine has been proposed as moderately stable and free from irritant properties. One equivalent of salicylate of sodium will also cause the solution of one equivalent of caffeine, and the following formula has been commended by M. Tanret for hypodermic use:

℞ Sodi. salicyl. 31 grammes.
Caffeine 40 grammes.
Aqua. destillat. 60 grammes.
M.

In order to avoid gastric irritation, it is best to administer caffeine after meals.

The action of caffeine upon the circulation has not been sufficiently studied to enable us to reach positive conclusions. It can hardly be doubted that it has a direct influence upon the heart, although that viscus continues to beat after the cessation of respiration in animals poisoned by the drug. According to Voit (quoted by Brill), in the frog the

rapidity of the cardiac pulsation is at first increased, but the pulsations become slower and slower, and are accompanied by irregularity of rhythm, the heart finally ceasing to act, but still responding to stimuli at a time when the voluntary muscles are absolutely dead. Falk, Stahlmann and Johannsen observed that caffeine first increases then lessens the frequency of the cardiac pulsations in the frog. According to Johannsen, the lessening of the frequency comes on the more quickly and more powerfully as the size of the dose is increased. By-and-by, the heart begins to beat irregularly, with short intermissions, which, as time goes on, grow longer and longer, and at last movement ceases. Johannsen found that the heart of the frog was similarly influenced, whether it was cut out or in situ.

Aubert and Haase (*Pfluger's Archiv.*, vol. 5, p. 608), find that the action of the alkaloid upon the pulsations of the frog's heart varies greatly, and, indeed, the individual experiments of the authors previously quoted will show such variation. This is affirmed by the research of Dr. Rioschiro Maki (*Ueber den Einfluss des Camphers, Caffeins and Alkohols auf das Herz*, Strassburg, 1884), who experimented on the cut-out frog's heart with the Williams-Ludwig apparatus, and found that the pulse was variously affected. In most of his experiments the arterial pressure, *i. e.*, the heart's work, was markedly lessened, but in a few cases it was distinctly increased. It would seem as though small doses of the alkaloid stimulated the frog's heart, and large ones depressed it.

Upon the heart of the mammal, so far as can be judged from the present evidence, caffeine acts more powerfully than upon that of the frog. Leven found that in the first stages of the toxæmia, both the pulse and the arterial pressure were markedly increased. In a series of experiments upon dogs, Aubert (*Pfluger's Archiv*, vol. 5, p.612) found as an almost constant effect that the drug produced an increase in the pulse rate, with a marked lessening in the height of the pulse wave. There was also marked fall of the arterial pressure, which, with the small pulse wave, Aubert believed to be the result of the direct action of the drug upon the heart walls. These experiments were made with very large amounts of the alkaloid injected into the jugular vein; in most cases, the animal being kept alive by artificial respiration. In one experiment there was a very distinct rise of the arterial pressure (*Loc. cit.*, p. 615, vol. 5; *Archiv*, vol. 9, p. 36).

Prof. Binz (*Archiv f. Experim. Path. u. Pharm.*, IX, 37) made two experiments upon dogs; in one of them the alkaloid was given after section of the vagus. In each case there was a very distinct rise of arterial pressure. Maki made a number of experiments and found that large doses were followed by a distinct fall of the arterial pressure. In most cases he failed to obtain a first rise of the arterial pressure; but as his experiments were made upon animals that had been chloralized or atropinized, they are of comparatively little value. Aubert (*loc. cit.*, p. 617–18) found that after section of the vagi the frequency of the pulse was still increased by caffeine, and that galvanization of this nerve failed to arrest the heart's action. The most important evidence indicative of a stimulating cardiac power in the drug is furnished by Leven (*loc. cit.*, p. 184), who asserts that after he had divided the pneumogastrics and sympathetics, and isolated the heart from all connection with the nerve centres, an administration of caffeine increased both the heart pressure and the pulse rate.

This summary comprises all the experimental evidence that we have in regard to the action of caffeine upon the circulation. It is very evident that at present no positive conclusions can be reached, and that further researches are imperatively demanded.

A case of poisoning by coffee is reported by Dr. Curschman (*Deutsche Klinik*, 1873, 377); a woman, in order to produce an abortion, took a decoction made from about eight ounces of freshly-roasted coffee. The symptoms are said to have commenced in about a quarter of an hour. The patient was first seen two hours after the injection of the dose and she was found in a condition of great anxiety, with a feeling of impending death, and a sensation of intense need for air; she was exceedingly restless, and continually attempted to get up from her seat but was unable to, being powerless to rise. All the extremities, but especially the hands, were affected with very pronounced choreic tremors. She knew persons and her surroundings, but her cerebration was very much affected, and the next day she remembered nothing that had happened at this time. The respiration was quick, 24 and 25 per minute, and short. The pulse 112, the heart beats very strong, even violent. Later there were the same sensations. One hour after the ingestion of the dose violent diarrhœa set in and continued until the next day. The passages were very thin and watery, with but little violent pain but with

tenesmus. Every quarter of an hour the patient was forced to urinate with marked tenesmus of the bladder. The urine was greatly increased in quantity, with specific gravity of 1014.

Professor Binz affirms that in susceptible persons he has seen similar symptoms; cardiac palpitation, violent tremblings of the extremities and choking sensations in the throat produced by doses of about four grains of caffeine. We once saw five grains of caffeine cause symptoms of cardiac distress.

TREATMENT OF RHEUMATISM WITH OIL OF GAULTHERIA.

IN SPITE of the fact that salicylic acid and its salts may be regarded almost as specifics in the treatment of rheumatic affections, they nevertheless fail in a certain number of cases of producing any decided curative effects, while their use is likewise also frequently attended by many inconvenient symptoms. The title of an article by Dr. H. H. Seelye (*New York Medical Journal*, Nov. 3 and 10, 1884), of "A New Specific for Rheumatism," might naturally, therefore, be expected to attract a great deal of attention. We find that Dr. Seelye has been using the oil of gaultheria for the last eighteen months in the treatment of various types of rheumatism in the wards of the Bellevue Hospital in New York, and he states that the results which followed its use have been so surprising that it now is his main reliance in the treatment of all rheumatoidal affections.

This drug has also been given in a large number of cases of acute articular rheumatism in the Jena hospital, and it there also proved to be possessed of nearly as great and as prompt curative powers as salicylic acid, though having with the latter the objection of causing ringing in the ears. Prof. Rossbach, who makes this statement (*Deutsche Med. Zeit.*, Dec. 24, 1884) could not understand how the drug was given by American practitioners as a stomachic, as it appeared to derange the digestive apparatus and destroy the appetite.

Prof. Senator also states (*Berliner Klin. Woch.*, Jan. 5, 1885) that he has employed this oil in a number of cases of rheumatism, and finds that it is *almost* as effective as salicylic acid, though it is by no means free from the disagreeable features of the latter.

The patients, according to Dr. Seelye, almost invariably experience great relief; and, in nearly all cases, in twenty-four hours the pain and swelling have left all the joints, except perhaps one articulation, and there would only remain a slight stiffness in the previously inflamed parts. It appears, however, that the oil of gaultheria so administered produces ringing in the ears and dizziness, with headache and a sensation of fullness in the head. If the drug is persisted in after the occurrence of these symptoms, the evil effects become still more marked; the patient would then experience a loathing of the drug; nausea and vomiting would set in, and dizziness, tinnitus aurium and headache would increase; the muscles of the hands, limbs and face would become tremulous, skin flushed, and the whole body bathed in a profuse perspiration; at length the patient would become delirious, the symptoms in some instances closely resembling those of delirium tremens. It must be acknowledged, however, that these severe symptoms are stated to be exceptional; in a large majority of cases only a little ringing in the ears would be complained of, and this would soon cease upon the diminution of the dose or complete withdrawal of the drug.

The similarity between these symptoms and those produced by salicylic acid is most striking; particularly when we read that Dr. Seelye states that these extreme symptoms above alluded to, almost invariably occur in patients who had been drinkers, while it is well known that salicylic acid also acts in a very unfavorable manner upon drinkers, violent delirium being the early symptoms of its influence. Further, we have other grounds for believing that there can be little doubt that these effects are to be attributed to the salicylic acid, which is contained in this oil. In 1875 Professor Proctor first proved that the acidity of the oil was due to the presence of this acid, and M. Cahours has confirmed this statement, showing that one-tenth of the oil consists of a peculiar hydrocarbon, which he called gaultheroline, the remaining nine-tenths being composed of methyl-salicylic acid, an acid which forms crystalline salts, which when subjected to heat are resolved into salicylic acid and wood spirit. The presence of salicylic acid in this oil is further shown by the fact that it develops a red color with ferric salts. It would then seem clear that the oil of gaultheria owes its value in the treatment of rheumatism to the ninety per cent. of salicylic acid which it has been found to contain; the question, how-

ever, arises, is there any advantage in giving salicylic acid in the form found in oil of gaultheria over its use as a salicylate?

Dr. Seelye attempts to answer this in the affirmative by publishing a table, in which he centrasts the results of the treatment of rheumatism by the oil of gaultheria and salicylic acid, though he does not seem to be aware that the curative effects must in both cases be attributed to the same agent, and the only question can be as to the convenience of administration. This point has been very slightly touched upon, though from what we can gather from Dr. Seelye's paper, its disadvantages are as great, if not greater, than those of the salicylic acid as ordinarily given, and the curative results in his comparative table are so nearly identical as not to need attention. Prof. Senator, however, who appreciates the fact that in giving this oil we are only giving salicylic acid, points out one advantage in giving this otherwise superfluous drug: namely, that in the few cases where patients refuse to take salicylic acid, oil of gaultheria may be substituted and the patients thus receive salicylic acid without knowing it.

There is one point, however, in Dr. Seelye's paper which should be noticed; that is, that in the treatment with oil of gaultheria six deaths occurred, and all of these patients "had unmistakable symptoms of acute alcoholism, which symptoms there is no reason to believe were induced by the oil of wintergreen." The error in the latter portion of this sentence is too serious to be overlooked. Dr. Seelye has himself already called attention to the fact that the symptoms produced by the use of this oil in drinkers simulates delirium tremens, and as is well known, salicylic acid is most dangerous to drinkers. No one would therefore think of continuing the use of salicylic acid in drunkards, and the belief that in oil of gaultheria we have a "new specific for rheumatism," should not lull us into a false security in similar cases.

Finally, Dr. Seelye's statements as to the sedative effects of local applications of oil of gaultheria to inflamed joints is evidently to be explained by a cutaneous absorption of the salicylic acid contained in this oil, since similar applications, made by Dr. Randolph and Mr. Dixon with solutions of salicylic acid, produced the same effect, absorption of the acid being proved by its detection in the urine.

PALATABLE PRESCRIBING.

WE print under the head of Correspondence a letter about a very important subject. We agree entirely with the writer, that one of the most serious practical questions which presents itself to the practitioner of medicine, is how to render palatable drugs that are nauseous. But, as is often the case, it is much easier to point out the necessities of the present than to give a complete remedy. The pain sense is believed to have been given animals for the purposes of their protection from injury; and, in the same way, nauseousness is, by a law of nature, for protective purposes, connected very generally with medical powers; and a law of nature is a thing not easy to avoid.

Cough mixtures can be to a certain extent rendered palatable by a selection of proper vehicles. The citrate of potassium can be largely masked by the free use of lemon juice. Muriate of ammonia is largely covered by liquorice, provided the latter be added in such quantity that there will be ten to fifteen grains of it for every ten grains of the muriate. The addition of glycerin to a mixture containing an ammoniacal or other irritant salt, often has the most happy effect in obtunding the acridity. It must not be forgotten, however, that glycerin throws out of solution most alkaloidal salts. This is essentially important in connection with the fact that the addition of glycerin to the tincture of the chloride of iron is most advantageous from the æsthetic point of view. We are very apt to combine tincture of chloride of iron with salts of quinine, strychnine, or other alkaloids. Even when such solution is very strongly acid, glycerin precipitates the organic principle. Syrup of squills, syrup of ipecac, and most other sweet expectorants, can readily be masked by the syrup of wild cherry bark, provided cyanide of potassium (at least $\frac{1}{20}$ of a grain to a dose) be added to intensify the prussic acid taste. The excessive sweetness of these mixtures is disagreeable to some individuals; this, of course, can readily be obviated by the addition of lemon juice or other acid.

There are certain very valuable remedies whose nauseousness in solution cannot be overcome by any combination. Under these circumstances the endeavor of the practitioner should be to give a dose so small and in such form that it can be enveloped in a mechanical coating of some sort. Whenever the material is a solid, this is readily managed by giving it

in the form of a silver-, gelatin-, or sugar-coated pill; for, whatever may be said in regard to the solubility of these preparations, they are dissolved in the stomach with sufficient rapidity for all practical purposes, provided the pharmacist has done his work properly, and the pills are at all fresh. It seems to be a tradition of the profession, that all cough remedies should be given in liquid form. We hear continually of cough mixtures, but who ever heard of a cough pill? Now there is little reason in this. Squill, ipecacuanha, tartar emetic, all the ordinary expectorants except ammoniacal salts, can be given in a coated pill as well as in a nauseous mixture.

When the drug is of such character that it cannot be readily given in pill unless the dose be very large, it is readily administered in capsules. Oil of eucalyptus should never be given except in capsules. Oil of copaiba has for decades been habitually given in capsules for other than pulmonary purposes; why not also for chronic bronchitis? The ammoniacal salts can be given in capsules as well as in mixture. It may be objected by some, that their local irritant effects would be increased by such method of administration. This does not seem to be a valid objection; but if it is considered so, let the patient drink a half a tumbler of milk directly after ingesting the supposed irritant remedy, and the stomach will be protected much more effectually than if the nauseous drug were given in a teaspoonful of water.

THE ELIMINATION OF CAFFEINE AND THEOBROMINE.

ALTHOUGH all attempts to detect caffeine in the urine after the ingestion of an ordinary quantity of either coffee or tea have hitherto proved futile, STRAUCH (vide *Dissertation* Dorpat, 1884,) succeeded in determining its presence in the urine of animals after induced intoxication by this alkaloid. Hence the question would naturally arise, whether our present means for its detection in the urine in limited quantities be insufficient, or whether a certain amount only of it could be taken up by the economy, allowing thus merely of the detection of the surplus. The researches of SCHNEIDER, as published in Dragendorff's *Beiträge zur gerichtlichen Chemie*, are intended to elucidate this interesting problem, tracing at the same time the ultimate destiny in the economy of a substance, not examined previously in this respect, viz: Theobromine.

Regarding the delicacy of tests for caffeine in the urine, he succeeded in detecting 0.00005 gram. of it in 600 c. c. of urine. The test for caffeine depends upon the crystallization of the alkaloid when treated with benzine or chloroform, or its color reaction with chlorine water and ammonia. The needle-shaped crystals, produced by the former process, are easily soluble in hot water and alcohol, but reappear in round shapes after the addition of concentrated solutions of calomel or nitrate of silver. Caffeine strikes a red color, even when present in very small quantities, when treated with chlorine-water and diluted ammonia successively. This alkaloid could readily be detected in the blood, the kidneys, the stomach and small intestines of cats after the ingestion of 3 grains, while the urine, if any was found in these cases, also contained caffeine. In other experiments, however, where smaller quantities of the alkaloid were used, it could not be detected in the urine. Thus, after a subcutaneous injection of $\frac{1}{3}\frac{1}{3}$ grain of caffeine, it could not be found, but was readily determined when $\frac{1}{2}\frac{1}{0}$ grain was given.

In men the alkaloid could not be found in the urine after the ingestion of $\frac{1}{2}\frac{1}{0}$ grain, 15 grains, 30 grains, and even 45 grains, though after the consumption of 75 grains within three hours, the urine of the first nine hours only showed certain proofs of containing caffeine.

The influence which a simultaneous indulgence in lager-beer exercised over the appearance of caffeine, was very notable; the alkaloid was invariably fonnd, even after small quantities precluding ordinarily its demonstration, when associated with the beer regimen.

The deductions are thus gained that the economy is capable of disposing of a certain limited quantity of caffeine, but larger doses of the alkaloid are excreted unchanged. Besides, it is evident that increased diuresis favors the non-absorption of the drug.

After the ingestion of coffee in a quantity corresponding with 3 grains of the alkaloid, the urine was found to be free from caffeine, but distinct reactions were obtained after the use of a quantity of coffee equal to 6 grains of caffeine.

The experiments with tea led to very similar results.

Theobromine is tested for in the urine, acidulated with dilute H_2SO_4, with chloroform;

in the blood, the different organs and other complex compositions, with alcohol.

It does not crystallize when treated with chloroform, like caffeine, nor is it so easily soluble in water as the latter, but it corresponds with it in its color reaction and behavior towards calomel and nitrate of silver. Theobromine appeared in the urine of men after ingestion of 45 grains or more, its excretion, like that of caffeine, being favored by diuresis.

Caffeine and theobromine, taken conjointly by an adult in a dose of 15 grains each, could not be detected in the urine.

In conclusion we refer to the alleged power of both caffeine and theobromine of preventing decomposition of the urine for six weeks.—*Beitr. z. ger. Chemie Dorpat*, 84.

THE INDEX MEDICUS.

IT IS not often than an editor is justified in praising the publishers of his journal; but we trust our readers will understand our motive when we speak words of strong approbation of Mr. Davis for undertaking the republication of the *Index Medicus* after the history of pecuniary failure which has attended the enterprise. It is but a trite saying that the highest and most valuable work never brings pecuniary reward. The worker in abstract science must be satisfied with a harvest of approbation from his fellows and from himself. The *Index Medicus* is a journal which is to ordinary literature what abstract is to popular science. It furnishes the working material for the workers of the profession, and furnishes this material too, in such a shape that it cannot be procured elsewhere. Modern medical literature has become so gigantic in its extent, so multiplied and scattered, that it is impossible for any ordinary physician without aid, to keep even a moderate knowledge of its more remote regions. The *Index Medicus* is to the medical thinker and writer a chart of medical literature. Its publication can never pay as a financial enterprise. With all the efforts which have hitherto been made, the publishers have sunk in it about a thousand dollars a year, and it is this responsibility which Mr. George S. Davis has assumed, simply because he has believed the good to be achieved was well worth the sacrifice of money.

We hold, however, that the medical profession ought to bear this burden at least in part. The subscription price to any one individual is a trifling matter, and no man who desires either to know what is being done throughout the world in his own special line of work, or to write matter that is worth reading, can afford to be without access to the *Index Medicus*.

We earnestly urge our readers to sustain Mr. Davis in his undertaking by their subscriptions:

First: Out of love to their profession, and to that humanity for which the profession exists.

Second: Because it will pay the individual physician to subscribe.

ANNOUNCEMENT.

We take pleasure in announcing that Mr. George S. Davis, of Detroit, has undertaken to continue the publication of the *Index Medicus* on the same general plan, and with the same regard to typographical accuracy and finish as heretofore.

On account of the delay required to perfect this arrangement, the first number of the journal for the current year will comprise the literature of January, February, and March, after which it will appear monthly, as usual.

At the end of the year, in addition to the usual annual index of names, subscribers will be furnished with an index of subjects to the volume.

So many expressions of regret and urgent remonstrances in regard to the threatened discontinuance of the *Index Medicus* have been received, that we think that we may venture to congratulate the profession on Mr. Davis' public-spirited determination to carry on the enterprise in spite of the fact that thus far it has not been pecuniarily remunerative.

It is requested that all exchanges, and books and pamphlets for notice, be sent to the *Index Medicus*, Washington, D. C.

JOHN S. BILLINGS, M. D.
ROBERT FLETCHER, M. D.

WASHINGTON, D. C., March 4, 1885.

To the Subscribers of the *Index Medicus:*

Mr. George S. Davis, medical publisher, of Detroit, Michigan, having undertaken, with the full approval of Drs. Billings and Fletcher, to continue the *Index Medicus* as his own enterprise, the undersigned, as the recent publisher of that journal, gives notice that the good will has been transferred by Mrs. F. Leypoldt, administratrix of the estate of Frederick Leypoldt, to Mr. George S. Davis, and a continuance of the cordial support given by so many of the faculty to the publication dur-

ing Mr. Leypoldt's lifetime, is asked for the enterprise of Mr. Davis, in the hope that his relations with the medical profession will enable him to obtain sufficient further support to make the enterprise self-sustaining.

R. R. BOWKER.

NEW YORK, March 4, 1885.

A NEW REMEDY FOR DYSPEPSIA.

WHEN a disease is as common as dyspepsia, as fruitful of suffering, and as prone to attack men whose success in business has given them more money than hygienic or physiological knowledge, it is sure to attract the attention of quacks as well as of cranks. According to an exchange, one of the latest discoveries of therapeutics has been made by a certain glutton, who had contracted dyspepsia. This worthy conceived the idea that chickens and other fowls escaped dyspepsia, notwithstanding their miscellaneous diet, by means of the large quantities of sand, gravel, plaster, etc., which they consume. He accordingly resolved to imitate them, and, as the reporter goes on to say, "used marble-dust instead of salt on his beef-steak, and filled his pepper-box with sea sand. Receiving so much benefit from these kinds of grit, he proceeded to swallow gravel and pieces of plastering. In a few months he was entirely cured. He can now eat as much as an ostrich, and never suffers on account of the kind or amount of food he consumes. He is thankful that he went to the chicken and considered her ways, and recommends the gravel remedy to all who are suffering from indigestion."

To any of our patrons who are desirous of trying something new for dyspepsia, we can commend the above plan as original and as probably as useful as the multitudinous quack remedies which are in vogue; at the same time we would advise that a lawyer be consulted and a will made, before entering upon this course of treatment. A heavy life-insurance policy would also probably prove a safe and profitable investment.

Reports on Therapeutic Progress

SOME VALUABLE SYMPTOMS OF DISEASES OF CHILDREN.

The diagnosis of many diseases of childhood being manifestly more difficult than that of affections of the more advanced phases of life, all suggestions tending to enrich their symptomatology have a just claim to our consideration. DR. POLITZER, of Vienna, the well-known authority on diseases of children, has published in the *Jahrbücher für Kinderheilkunde* an essay on the "Value of certain Symptoms of Infantile Affections" which has created a just and widespread interest. He epitomizes his conclusions in the following terms:

1. A strongly nasal or guttural sound audible when the child cries, is indicative of retro-pharyngeal abscess. The posterior wall of the pharynx should invariably be examined with the index finger, when in many cases the presence of an elastic tumor will confirm the diagnosis.

2. A noisy and slow expiration, lasting ten or fifteen times as long as normally, points, in absence of any other disease, to chorea major. This symptom, which is very characteristic, presents itself for several consecutive weeks, always at the same hour, repeating itself every seven or ten seconds. This prolonged and blowing expiration may be for months the only appreciable symptom of the affection, and disappears rapidly under the influence of large doses of quinine, but can reappear and be gradually followed by other symptoms of chorea major.

3. An inspiration which is constantly of a sighing nature, indicates the approach of cardiac marasmus and of paralysis of the heart. This symptom presents itself previous to the appearance of cyanosis, pallor of the face, and the feeble, thread-like pulse indicating the gradual failure of the circulation. This sighing respiration, in opposition to the choked respiration of croup, of pneumonia and of œdema of the glottis, is not characterized by a strong contraction of the diaphragm, nor by abdominal breathing, but by a soft and continuous sigh. Whatever may be the cause which determines the cardiac paralysis, which is often caused by drugs (heart-poisons), such as quinine, salicylic acid, pilocarpine and digitalis, this respiratory symptom deserves great attention and occasional therapeutic treatment. The same symptom, Politzer adds, he noted in fatty degeneration of the heart in three cases.

4. A very marked diaphragmatic respiration, attended by loud and sharp whistling, denotes bronchial asthma. A similar symptom occurs sometimes in croup (where it is generally accompanied by a forced and choked respiration), and in capillary bronchitis. Other signs, however, such as loud râles without a nasal sound, the rapid devel-

opment of pulmonary emphysema, the sudden appearance and disappearance of dyspnœa, and chiefly the notable remission of dyspnœa and whistling respiration during profound sleep, will aid in establishing the diagnosis.

5. The existence of a pause between the end of the expiration and the beginning of the following inspiration renders the existence of a very marked laryngeal catarrh or of croup very probable. In croup inspiration and expiration follow each other generally very closely, whilst in laryngeal catarrh we can often observe a pause between the two respiratory acts, by the repose of the diaphragm and larynx.

6. This noisy expiration with a long pause, existing since birth (stridulous respiration), which is occasionally interrupted by a spasm of ten or fifteen minutes, but which otherwise exists uniformly day and night, in sleeping and waking, is of no consequence and usually ceases spontaneously within eight months. Politzer thinks we have to deal here with a modification of innervation within physiological limits, analogous to the irregular cardiac contractions occurring during the first year of life.

Equally valuable are Politzer's conclusions regarding the symptomatology of nervous affections:

1. A notable somnolence manifesting itself without fever and, so to speak, without any other trouble, points, if lasting several days, to meningitis of the brain. The vomiting, the fixed cephalalgia, and finally the slow and irregular pulse, do not have so great a diagnostic value as the somnolence, as they may occur in several transitory and even extracranial troubles.

2. The anterior fontanelle notably raised beyond its normal level, but resisting and non-compressible, points to an exudation into the cranial cavity, or an increase of the cranial contents, such as in purulent meningitis of the convexity, cerebro-spinal meningitis, acute or chronic hydrocephalus, large tumors, acute cerebral œdema and intermeningeal apoplexy. If it be an increase in vascularity, an active hyperæmia, the anterior fontanelle would remain soft and compressible. If the fontanelle be gradually raised, prominent like a corner and resisting, but without a trace of pulsation, we can be reasonably sure of having to deal with a profuse intermeningeal hæmorrhage, *i. e.*, an apoplexy. An anterior fontanelle greatly depressed, with a concomitant depression of the eyes, indicates anæmia, resulting either from a profuse loss of the liquids of the body or from general marasmus.

3. A very slow movement of eyes and eyelids, the former remaining fixed for a long time, is a symptom of approaching basilar meningitis.

Of equal interest and value are Politzer's diagnostic suggestions respecting certain peculiar cries uttered by children in various ailments:

1. A sharp, intense cry uttered during sleep, every half-hour or hour, with a simultaneous expression of extreme anguish in the face, denotes simply nightmare, which can readily be prevented by a four-grain dose of quinine administered an hour or two before bed-time.

2. A periodical cry which often lasts five or ten minutes and is repeated frequently during the day and occasionally at night, leads to the suspicion of vesical spasm, provided colic and dyspepsia can be excluded. An emulsion of lycopodium, with or without the addition of belladonna, will give prompt relief.

3. A cry uttered during defæcation, associated with a dread of this action and even refusal to perform it, ought to prompt a search for anal fistula. Surgical interference and an ointment of zinc and belladonna will usually lead to a speedy cure.

4. An intense almost continual cry, bespeaking great pain, denotes otalgia, or middle or external otitis, if the child moves its head restlessly on the cushion and puts its hands often to its head.

5. A cry uttered almost incessantly for days or weeks, and which grows more intense on moving the limbs, and is associated with a continuous fever and profuse perspiration, is an indication of acute general rachitis.

In conclusion our author enumerates some other peculiar symptoms of several affections, which might serve as useful guides in determining their diagnosis:

1. The special physiognomy of children suffering from congenital syphilis consists in a depression of the bridge of the nose, a greyish discoloration of the skin, absence or scarcity of the eye-lashes, a yellowish border of the eye-lids, and, finally, the well-known mucous patches on the lower lip.

2. A notable feebleness and marked immobility of the limbs, which do not refer to an apparently slight or passing affection, will after a certain length of time assure the diagnosis of infantile spinal paralysis. Whenever the premonitory symptoms, such as

fever, dyspnœa, convulsions — symptoms which, especially in nursing-children, require at all times special attention—make their appearance, the condition of motility and sensibility will be a sufficient warning of the coming danger.

4. After certain affections, such as cerebro-spinal meningitis, we ought to assure ourselves that no diminution of the visual powers, which often results from a circumscribed meningitis on the floor of the fourth ventricle, has taken place.

5. A depression of the intellectual activity in little children subsequent to the grave infectious fevers, such as typhus and typhoid, and meningitis, constitutes often the beginning of acquired idiocy. Strychnine exercises an advantageous influence in these cases. The habit of keeping the hands constantly before the eyes, and of looking at them without a motive and in an automatic fashion, raises the suspicion of congenital idiocy.

6. A cranial ossification delayed beyond the physiological limits denotes rachitis.

7. A stiff and troublesome carriage in walking, sitting or bending; a painful expression in the face when attempting to lift anything in playing, denote the initiation of Pott's disease. A laboring respiration and incessant stomachic and abdominal pain usually precede this affection for five or six weeks.

8. Persistent vomiting occurring at the ingestion of all victuals for several weeks, in children whose cranial bones are completely ossified, but whose head has an abnormally large circumference, denotes that chronic hydrocephalus has been superseded by acute hydrocephalus.

A PORTABLE TRANSFUSION APPARATUS.

At the meeting of the British Medical Association, held in Belfast, Dr. Walter showed in the Obstetric Section a portable transfusion apparatus for defibrinated blood or saline solutions which possesses in a very simple form all the advantages of the more complex apparatuses. It consisted of a glass tube, sufficiently large to hold four ounces of fluid, one end of which is drawn out to a point and connected with a piece of India-rubber tube, which is about the same shape as a small Higginson's syringe. To the distal end of the tube is fastened a silver cannula having a probe point extending some distance beyond the eye. Before charging the apparatus with blood, a clip or some form of forceps is placed on the tube, and as soon as the instrument is charged, it is allowed to stand in a small vessel of hot water, so that the blood may remain at a proper temperature until required for use. Blood is received from the vein of the donor into a clean, warm bowl, and should be defibrinated as it flows by stirring with a glass rod or a fork for a few minutes,and then straining through muslin into another bowl, taking care to get rid of all air bubbles. The next step of the operation is to open a vein in the bend of the patient's elbow by transfixing it at right angles to its course with a small tenotomy knife. The apparatus containing the blood is now removed from the vessel of hot water, and a little blood permitted to escape from the eyelet hole so as to expel all air, and the cannula then pushed into the vein. When the apparatus is raised the blood will sometimes find its way into the vein by its own weight; but more frequently it is necessary to force the blood into the vein by squeezing the dilatation on the tube. This instrument possesses great advantages in simplicity, in its freedom from expense, and the readiness with which it is kept clean; besides being safer than any form of syringe, the piston of which might be out of order when required for use. It is readily seen that it is equally suitable for the making of transfusions of saline solutions, which are very often serviceable in temporarily warding off the fatal effects of the loss of large amounts of blood.—*British Medical Journal*, December 20, 1884.

ELIMINATION OF IODIDE OF POTASSIUM BY THE URINE.

The rapidity of the elimination from the system of the iodide of potassium has been often studied, but in all cases the drug was administered by the mouth, and it seems evident that the confusion of statement which has characterized the results of these studies is at any rate partly attributable to the varying degree of rapidity of absorption under these circumstances; for when absorption is slow, excretion must necessarily be less rapid than when large amounts of the salt at once enter the blood. This latter plan of research has been followed by Dr. Vincent (*Thèse de Lyons*, 1883), in experiments made on dogs and on the human subject in a state of health and disease, by injecting the iodide of potassium under the skin. The following expresses the results of his experiments:

1. If in a dog of average size a subcutaneous injection of 2 centigrammes of iodide of

potassium is given, the average duration of elimination through the urine is 72 hours, and the quantity eliminated, five milligrammes, represents one-fourth of the amount originally given.

2. If the same quantity of iodide of potassium is dissolved in blood serum instead of water and injected hypodermically, the duration of the time of elimination is extended to six days, and the amount eliminated may reach as high as eight milligrammes.

3. If a corresponding quantity of iodine is injected in the form of iodised albumen the elimination is governed by about the same conditions as noted in the case of the solution of iodide of potassium in serum.

4. If the kidney is altered by the previous action of chromic acid, the elimination is much more prolonged than in the normal condition: it may last four days and nearly all the amount of the iodide injected may be recovered from the urine.

From his experiments on man Dr. Vincent has learned that when two centigrammes of iodide of potassium are injected under the skin, the elimination is never prolonged later than thirty hours, while about eight milligrammes may be recovered of the amount injected.

Fever considerably lengthens the duration of elimination and increases the amount eliminated.

ACETAL.

According to the report of LEUBUSCHER, recent trials made with diethylacetal, especially in hospitals and asylums for the insane, do not warrant the recommendation given to it by its discoverer, Mering. The drug was supposed to act as a sedative to the motor system and even as an hypnotic, but neither of these physiological actions could be obtained with any degree of regularity or promptness; whilst its objectionable features, such as its disagreeable taste and irritating properities were found to be quite considerable. At the university Hospital of Jena the drug was exhibited in several cases of chorea without any appreciable benefit. But another interesting phenomenon attending its application made its appearance. A girl of ten years of age had taken the drug twice, in doses of seventy-five grains each, without any effect; when taking the next time a somewhat increased dose, a striped diffusive erythema made its appearance on the face about a minute after ingestion of the drug. The reddened portions were hot, not elevated, and painless on pressure; besides, salivation was quite notable; the heart appeared in a state of great excitement, the the pulse being 144 per minute. The erythema, which disappeared after four hours, could be reproduced at will by each succeeding dose. In a boy of eight, erythema appeared only once after a dose of seventy-five grains. *Deutsche Med. Zeitung*, Dec. 25, 1884.

KUMISS KEFIR.

The preparations of Kumiss have never received in this country the degree of attention to which they are fairly entitled. Their undeniable usefulness in affections against which the resources of the practitioner are lamentably deficient, if not absolutely powerless, enhance their claim to a thorough clinical trial. The remedy comes to us with the twofold credentials of professional recommendation and of a long-enjoyed and tested popularity. Its exhibition in the case of the late President Garfield and subsequent discussion in both the secular and medical press has, if not removed the strange stigma resting on it, at least brought it before the profession more definitely than ever before.

In the (*Pharmaceutische Rundschau* Jan., 1885) are published some interesting points regarding the history, preparation and properties of kumiss and the recently introduced kefir kumiss.

Kumiss is milk after and during the process of fermentation, and was first medicinally employed by the inhabitants of southern Russia. The Tartars prepare kumiss from ass's milk by the addition of blood, which facilitates fermentation, and preserve it in leather vessels. Others again use mare's milk, to which beer-yeast is added. Exposed to a temperature of 68° F. the sugar of the milk is gradually decomposed and a substance entirely different from milk, namely, kumiss, results. It soon became known all throughout Russia, that the nomadic tribes of the south, however reduced they got through malnutrition and exposure during the winter, could easily regain flesh and strength by the persistent use of kumiss during the summer. Thus the remedy soon gained an excellent reputation in phthisical and other wasting diseases, where the low state of the digestive apparatus and general adynamia called for a readily digestible and at the same time highly nutritious diet. The positively remarkable success, which the use of kumiss

achieved, especially in phthisis, is of course not due to any influence the remedy exercises over the tissue-changes going on in the lungs, but to the improvement it produces in the nutritive processes of the economy. Rivalling and possibly excelling in ready digestibility all other articles of diet, kumiss heightens the tone of the alimentary tract primarily, improves nutrition and thus to a certain extent is capable of indirectly checking extensive tissue-waste. With increased powers of resistance of the economy the febrile symptoms naturally abate, and dyspnœa, cough and expectoration decrease. The question, why in the preparation of kumiss cow's milk be not employed in preference to ass's or mare's milk, is easily answered by the fact, that mare's milk, except woman's milk, is more nutritive and more readily digestible, and hence for the preparation of kumiss more eligible than any other.

It is only within the last few years that the discovery of a new ferment, called *Kefir*, has led to the use of cow's milk in the preparation of kumiss. The quality of the cow's milk is of paramount importance in making kefir kumiss. The milk secreted during the first few days following parturition, the so-called colostrum, being little nutritive, but very thin and very easily digestible, is most eligible at the commencement of the kumiss regimen, while gradually the more consistent forms are to be substituted. Next to the quality, the age of the milk claims consideration, the milk just obtained from the cow being fittest for use.

Kefir consists of small hard lumps, of a mushroom-like odor and light-yellow color, resembling the inferior qualities of gum arabic. After being soaked in water kefir swells considerably, grows white and elastic and can be easily torn. Milk appears to be the most favorable soil for its development; when immersed in it, the lumps grow gradually larger, then divide and subdivide, the single parts again growing larger. At first the lumps sink to the bottom but soon begin to rise to the surface raised by small bubbles of carbonic acid attached to them, and remain on the surface till the greater part of the sugar of milk has been changed into carbonic acid, alcohol and lactic acid. The presence of alcoholic fermentation makes itself distinctly perceptible to the ear by the bursting of small bubbles of carbonic acid.

Kern regards the kefir-ferment as consisting of yeast-cells (saccharomyces cerevisiæ, Meyer) and bacillus-like bacteria (dispora caucasica). Kefir resists unfavorable conditions of life to a singular degree; thus it remains intact for two months in a concentrated solution of picric acid or in a 3% solution of chromic acid. To prepare kefir kumiss for actual use, about 7 dr. of kefir are mixed with two glasses of skimmed milk and allowed to stand over night. In the morning the milk is decanted, then diluted with skimmed milk and stored away in sealed bottles; twenty-four hours after, during which period the substance is subjected to repeated shaking, kefir kumiss is obtained ready for use. The following table illustrates its composition as compared with milk and ordinary kumiss:

In 1000 parts	Milk.	Kefir.	Kumiss.
Albumen	48	38	11
Fats	38	20	20
Lactose	41	20	22
Lactic acid		9	11
Alcohol		8	16
Water, salts	873	904	918

Kefir is much more palatable than kumiss and does not create any digestive troubles like the latter, besides it is much cheaper, as the 2 dr. originally needed (which cost about $1.50), can be used for the preparation of very large quantities of kefir kumiss on account of its extensive propagation.

Kefir kumiss is an excellent article of diet in all cases of low vitality, and when associated with iron, a reliable tonic in chlorosis, anæmia and nearly all affections of the respiratory apparatus, but chiefly in incipient phthisis; it is also very valuable in chronic gastric and enteric affections. Kefir is to be taken in the morning, on an empty stomach, and to be drunk slowly, beginning with two glasses, and gradually increasing the quantity to ten glasses. Mandowski reports very gratifying results from its use in dyspepsia, vomiting from gastric irritation, gastralgia and gastric catarrh, and even in catarrhal pneumonia, phthisis, cancer and syphilis. The numerous kefir hospitals in Russia in the hands of the regular profession can only be considered as an additional favorable testimony to the value of the new remedy.

PEPTONIZATION.

An observation communicated by M. Marcano to the Academy of Sciences, and reported in the *Lancet* for December 27, 1884, is suggestive of what may prove a valuable process for the conversion of albuminoids into peptones. If a small quantity of a fresh sap —the agave, for instance—be added to chop-

ped meat, first covered with water, and the mixture be kept at a temperature of 39° to 40° C. an active fermentation is immediately set up with evolution of inodorous gases. At the end of 36 hours, the fibrin has disappeared, and a liquid is left containing peptone equal in weight when dried in a stove to the fifth of the fresh meat used. This fermentation appears to M. Marcano to be due to the vital action of micro-organisms and to resemble the peptonization of the gluten of flour by a bacterium which is said to take place in bread-making. In confirmation of this view, it is stated that if the juice of the plant be saturated with chloroform the fermentation is not set up; moreover, a new "mucorinée" may be cultivated by sowing a few drops of agave sap in sugared water. This "mucorinée" is capable of completely dissolving fibrin in the presence of water. A large number of other fruits and juices are stated to be endowed with properties similar to those possessed by the sap of the agave. Papaw juice is said to be relatively weak compared to the peptonizing activity of other juices which contain no digestive principles like pepsin. M. Marcano is of the opinion that the new method of peptonization will afford a simple and economical means of preparing a pure peptone, quickly and at a low price, and suggests that it might be applied upon a large scale, so as to allow of the export of meat from South America in a form more nutritious and economical than the extracts.

SCHISCHM-SEEDS IN OPHTHALMOLOGY.

The seeds of cassia absus or cassia auriculata have long been used in Egypt, like the jequirity-seeds in Brazil, as a popular remedy against an inflammatory affection of the eyes, so common in that country as to receive its name from it, *Ophthalmia Egyptica*. Dr. Frank, physician to the duchess of Parma, who resided at the beginning of this century in Egypt, appears to have been the first European physician who used these seeds, called *schischm*, against ophthalmic affections. His method, taken from the Egyptians, consisted in powdering the seeds, mixing them with equal parts of sugar and applying a very small quantity of the mass at night to the eyes. The remedy is only of service when employed either in the very initiatory phase of the disease, or on the eighth or tenth day after the disappearance of the acute symptoms of inflammation. It is also useful in slight opacity of the cornea, especially in combination with alum and nut-galls. Frank regarded the remedy as the best of all known, preferable to any collyrium. An instantaneous but moderate sensation of heat and increased lachrymation are invariably caused by the drug.

Gräfe instituted experiments with the drug and obtained very favorable results in opacity of the cornea and contagious inflammations of the eye. But on account of a depreciatory report by Rust, appearing shortly after, its use has been discontinued. It certainly appears worth while to subject the drug in question to a rigid examination.

DISINFECTANTS.

All the at present known agents of disinfection can be classed in three categories according to the nature of their action, viz: the physical, physiological and chemical disinfectants.

As purely physical disinfectants rank dry heat and hot vapors. Both are powerful agents, but labor under the disadvantage of having but a limited applicability as to the area involved.

The physiological method is based on the supposition that the majority of infecting agencies are living organisms, and intends their destruction by drugs which prove poisonous to them without, in the quantity exhibited, injuring the human organism. The chief representatives of this group are the corrosive sublimate and the products of dry distillation, as carbolic acid. The sublimate is unfit for any extensive use on account of its powerfully poisonous action even in small quantities on man and animals, whilst the carbolic products are not sufficiently energetic in their action.

The third group is formed by chlorine, bromine and sulphurous acid and owes its effects to a chemical decomposition of complex compounds. Bromine, especially in its vaporous form, has proved the most efficient of the three, especially for the disinfection of rooms and houses. It can be employed as a pure vapor, or mixed with air or steam. As a simple purifier of air in crowded apartments, ships, hospitals and barracks, bromine is the most eligible agent.—*Deutsche Med. Zeitung*, 10, 1884.

MALARIAL HÆMATURIA TREATED WITH QUININE SUBCUTANEOUSLY.

Hæmaturia is one of the rarest complications of malarial fever. Dr. Owen, of Louisi-

ana, has recently, however, had an opportunity of observing such a case, and from the fact, not only of its rarity, but of its being cured by the subcutaneous use of quinine, it is worthy of notice. According to Dr. Owen, the practice followed in Louisana of irrigating their rice fields with water from the Mississippi, which when turned off leaves a large amount of fish, etc., to putrefy under the summer's sun, has been followed by the appearance of various complications of malarial fever of that region; and as a consequence what is generally known as typho-malarial fever, and even the ordinarily rare complication of hæmaturia have been quite frequently noticed.

The case reported by Dr. Owen, in the *Medical News* of January 3d, was that of a man, aged 37, who, in addition to the symptoms of malarial fever, complained of pain in the head and back, and was passing considerable quantities of blood from the kidneys. A purgative was ordered and 30 grains of quinine given. Although the temperature declined, no symptoms of cinchonism followed, but the hæmaturia was not arrested, and the patient's condition became more and more serious; tongue heavily coated, temperature 100° F., and stomach very irritable. Fifteen grains of sulphate of quinine were then injected into his arm on three occasions, at intervals of one hour, and on the following day the temperature was reduced to 100, while blood disappeared from the urine. The same quantity of quinine was given on the following two days, and from that date the patient's convalescence was rapid, and he was able to leave for the sea-shore in five days. The subsequent treatment consisted of Fowler's solution of arsenic at each meal. No abscess resulted from the injection of quinine into the arm, and its subcutaneous use undoubtedly seems to have saved the patient's life.

AMYLO-VALERIANIC ETHER.

The present phase of medical science owes its development largely to the just appreciation of the results of analytical examination of therapeutic agents within constant and easy reach. The majority of food-stuffs such as fruit, the therapeutic value of which is generally computed as limited to its laxative virtues, claim no other than a dietetic consideration. Still in its most ordinary type, the apple, we find a therapeutic principle of powerful activity and extensive applicability. It has long been known that persons dwelling in rooms where large quantities of apples were stored, experienced sensations of headache, languor, or presented symptoms of cerebral congestion clearly traceable to the absorption of the active principle of the fruit. Regarding the nature, mode of preparation, physiological action and therapeutic applicability of this active principle, we find some valuable details in an essay by G. BRUEL, of Paris.

Of the constituents of the apple, viz: Tartrates and malates of potash, tannic acid, sugar, cellulose, water and a certain essence, the latter exclusively can be accredited as its specific component, all others being equally found in plants in which the specific action of the apple is absent. This essence, then, which has been found to be the valerianic ether of amyl, is the active principle of the apple, and is known in the industries in a state of alcoholic solution under the name of apple oil. It will suffice here to say that it is prepared by the action of valerianic acid upon amylic alcohol, that it is of neutral reaction, colorless, limpid and not oily; its odor is ether-like and suggestive of valerian. Its inhalation produces a sensation of warmth in the nasal fossæ, followed by a momentary loss of smell.

Sharing the power of other ethers in dissolving fatty and resinous matters, the valerianic ether of amyl is unexcelled in its capacity of dissolving cholesterin, of which it takes up three times the quantity chloroform does, and at the same temperature; one gramme of cholesterine, pure and crystallized, is dissolved by fifty grammes of this ether at the temperature of the body.

The ether, when absorbed in the form of capsules containing gr. 0.15, (2½ gtt.) produces acceleration of the pulse, warmth of the skin, perspiration, cephalalgia, restlessness; it is a nervous excitant.

It resembles valerian in its action, but surpasses it in energy and rapidity, besides it presents decided anæsthetic capacities. Mr. Bruel succeeded in etherizing mice with this ether as rapidly as with chloroform. The sulphuric ether, though the most powerful dissolvent, of cholesterine, thus indicating its use in the treatment of hepatic calculi, is unfit for curative purposes on account of the rapidity of its diffusion and discharge by the respiratory channel. The valerianic ether is superior to chloroform as a solvent of cholesterin—though the latter has always been regarded as occupying the first rank in this respect—as its evaporation or elimination from the system after its exhibition proceeds

more slowly than that of any other agent. Hence the drug is the most powerful and least dangerous of all employed in the treatment of hepatic calculi. In the pains of gastralgia and hepatic colic the ether is of great value; in the latter especially its beneficial effects are conspicuous and comparatively lasting owing to its action as an anæsthetic, an excitant, and an antispasmodic, and on account of its feeble volatility. Dr. Nitot considers the ether indicated whenever a general excitation is required and has obtained better results from it in his hospital-practice than from valerian or its compounds. Finally, says Bruel, when administered in a dose of two capsules before bed-time, the drug produces a more natural and tranquil sleep than opium or chloral-hydrate. Its non-toxic properties are sufficiently illustrated by a Parisian physician taking 1.35 grm. (¾ fluidounce), at one dose without any ill consequences. To epitomize its action in the various affections, Bruel says: It produces sleep as well as morphine, without showing the danger attending the use of these.

It acts as a hypnotic in doses far smaller than chloral-hydrate, without exerting any depressant action on the heart like the latter.

It calms pain, colics, and spasms.

It is a tonic *par excellence*—raising rapidly the density of the urine of diabetes. The excitation it produces in the alimentary tract, renders digestion easy and regular; it has been advantageously used in flatulent dyspepsia.

The dose in nephritic or hepatic colic is two to three capsules containing each 0.15 grm. (2½ gtt.), repeating the dose every quarter of an hour, till the pain ceases. After the colic has passed, four capsules ought to be given daily, two before dinner and supper. To guard the stomach and avoid gastric irritation, milk ought to be given simultaneously with the capsules.

In gastralgia four or six capsules are to be given daily, aided of course by the milk-regimen. In neuralgia two capsules should be given every quarter of an hour till pain subsides. In muscular, not articular, rheumatism the ether is also of great value. The pains of dysmenorrhœa are instantly calmed by the ether, the flux being provoked; dose, six capsules daily, two before dinner and supper, and two before retiring. In dyspnœa the ether has been found useful after the failure even of sulphuric ether and fumigations of nitre: dose, four to eight capsules daily. Some physicians extol the drug as a certain relief even in so grave a condition as angina pectoris. If the merits claimed in Bruel's essay for the valerianic ether of amyl should be corroborated by a more extensive clinical use, the drug would rank amongst the most useful remedies known at present.

KAIRINE AS AN ANTIPYRETIC.

Trusservitsch, chief of the naval hospital in Kronstadt, has made 100 experiments with kairine to test its antipyretic value. He divides his observations into the following three categories:

1. Kairine administered by the mouth in doses of seven to fifteen grains shows its fullest effect, provided the temperature does not exceed 104° F., and a quantity of not less than fifteen grains be given. (33 observations.)

2. The salt not being readily soluble, one drop of dilute hydrochloric acid has to be added to each hypodermic dose of seven to fifteen grains. The injections caused no pain and no reactions, but did not prove more effective than the exhibition of the same dose given internally. (12 observations.)

3. Kairine internally, with rectal injections of carbolic acid, given simultaneously, gave the best results. As long as the temperature remained below 104° F. seven grains were given in conjunction with an enema of one and one-half ounces of carbolic acid (four-per-cent. solution), without producing any symptoms of intoxication. The temperature fell in half an hour 1.5°; in two hours 2.8°. The maximum fall thus amounted to 4.3°; the reaction was not so great as usually noted when kairine alone was given. (25 observations.)—*Deutsche Med. Zeitung*, 101, 1884.

A NEW MODE OF USING AN OLD REMEDY—CHLOROFORM WATER.

Saturated chloroform water is not only an excellent and handy excipient for many medicines, but it possesses also valuable analgesic properties. It is a stable preparation, and the savor is especially agreeable, sweetish, and when diluted one-half, devoid of all piquancy and acridity; it makes a good combination with nearly all medicines which it is desirable to administer in a liquid menstruum, disguising the insipid or unpleasant taste of many of them; it markedly enhances the sedative and anodyne properties of analgesic and narcotic remedies. Lasègue especially recommends chloroform water as a suitable vehicle for the administration of morphine, in

union with which it forms one of the best palliative cough medicines, as is generally acknowledged, in advanced phthisis. Probably no better excipient for the salts of iron can be found.

The mode of preparation is very simple. Into a flask two-thirds full of pure water, pour an excess of chloroform, agitate well the mixture several times for the space of an hour, and allow the chloroform to deposit itself on the bottom of the flask. Decant or syphon off the clear supernatant liquid. The solution should be perfectly transparent, containing a little less than one per cent. of chloroform. For internal administration it is generably desirable to dilute this saturated solution with an equal quantity of water; the dose of the dilute aqua chloroformi being about a dessertspoonful.

Lasègue has shown the unreliability of alcohol as a solvent for chloroform, and the difficulty of making a good preparation of chloroform water from the officinal spirit solutions. Nor are the emulsions free from a certain irritant effect and even causticity, felt for some time in the stomach after the ingestion; sometimes manifesting itself as acute pain.

Among the therapeutic advantages of chloroform water is one on which Lasègue and Beurmann much insist, namely, its use as an analgesic in painful stomach affections, whether these proceed from indigestion or from organic disease. In the pains of indigestion it is almost without a rival, speedily mitigating the functional distress by its marvelous topical sedative action. In the painful intestinal disorder often accompanying the completion of digestion, it is of no utility. Beurmann has had favorable experience with its employment in allaying the acute suffering and nausea which attend dilatation of the the stomach, especially during the digestion of food. He also strongly recommends it in cases of gastralgia, and here he is seconded by Dujardin-Beaumetz who introduces the diluted chloroform water by the stomach-tube, performing "lavage" with the solution, his formula being two teaspoonfuls of saturated aqua chloroformi to the quart of liquid. This preparation he regards as both calmative and antiseptic, and the washing process is, above all, indicated in gastric dilatation. Lasègue also finds advantage from chloroform water in the pains and nausea which accompany cancer of the stomach.

From the list of formulæ given by Beurmann we select the following:

℞ Sat. chloroform water 13 parts.
Peppermint water 3 parts.
Water 12 parts.

M. Dose, a teaspoonful for a calmative stomach potion. Good in nervous vomiting and vomiting of pregnancy.

℞ Saturated chloroform water 3 parts.
Syrup of orange 3 parts.
Solution morph. sulph. 1 part.

M. Dose, one or two teaspoonfuls. The above is a useful form for the administration of morphine.

℞ Hydrate of chloral 1 part.
Syrup aurantii cort. 25 parts.
Sat. chloroform water 50 parts.

M. Dose, a tablespoonful. The acrid taste of chloral is much modified when administered as above.

℞ Sat. chloroform water, peppermint water āā 50 parts.
Syrup of poppies 30 parts.
Bromide of potassium 1 part.

M. This preparation in teaspoonful doses is exceedingly valuable in the therapeutics of infancy.

The following is called by Dr. Beurmann the "salicylate potion":

℞ Salicylate of sodium 8 parts.
Syrup 30 parts.
Peppermint water 20 parts.
Dilute chloroform water 100 parts.

The disagreeable taste of salicylate of sodium is almost completely disguised in this mixture.

The following, called "hæmostatic potion," contains iron:

℞ Dilute chloroform water 130 grammes.
Syrup aurantii cort. 20 grammes.
Liquor ferri perchloridi gtt. xx.

M. Dose, a tablespoonful. The styptic taste of the ferric chloride is almost completely removed in this combination.

Lasègue recommended a now somewhat famous hydragogue cathartic potion, which is made by rubbing up one gramme of gamboge with fifty of syrup of orange and one hundred of saturated chloroform water. The dose is a tablespoonful every morning or every second morning.

The above formulæ are examples of the therapeutic range of this medicament. They can be varied at pleasure by the practitioner to meet special indications.—*Boston Med. and Surg. Journal*, January 22, 1885.

THALLINE, THE NEW ANTIPYRETIC.

The search for what might be termed the ideal antipyretic, *i. e.* a drug, the sole effect of which is the reduction of febrile temperature, has recently led, if not to the solution of

the problem, yet to the discovery of a number of drugs, all of which are possessed of positive merits. We need but refer to salicylic acid, benzoic acid, resorcin, hydrochinon, brenzkatechin, chinoline, kairine, and lastly antipyrine. With the exception of salicylic acid, none were capable of retaining their reputation for any length of time, but were more or less discarded as their disadvantages became better understood. Dr. v. Jaksch has the credit of presenting a new antipyretic to the profession, for which he claims certain advantages over those hitherto known. He accidentally discovered the remedy when experimenting synthetically with chinoline-bases, and called it "thalline." In his experiments he noticed that the salt retarded fermentation, and decomposition. He has used it in the form of an acetate, and sulphate and muriate, and states, that all of these are easily soluble in water, and strike a green color when treated with chloride of iron or other oxidizing agent, are of an acid reaction, and of an intensely bitter, aromatic taste.

Altogether Jaksch has used these salts in 86 cases of febrile affections, amongst which he mentions: intermittent fever, typhoid fever, rheumatism, measles, erysipelas, puerperal fever, pneumonia, and tuberculosis. In malarial fever Jaksch succeeded in aborting not only the fever, but also all other symptoms of the paroxysm, such as headache, perspiration, etc., by the administration of the drug 2 or 3 hours previous to the anticipated attack. Even in the height of the paroxysm thalline proved rapidly successful in eliminating all febrile symptoms. But in spite of this evident sway exercised by thalline over the febrile process, it was incapable of *curing* a single case of malaria, as the discontinuation of the drug was invariably followed by the return of the paroxysms, which finally of course yielded to treatment with quinine. The absence of all secondary effects was notable. Not inferior was the antipyretic effect of the drug in cases of typhoid fever. In one case of typhoid fever, well known in Vienna, that had resisted all efforts to reduce the temperature, including quinine and baths, the exhibition of thalline resulted in a reduction of the temperature of several degrees (Celsius), within a few hours. The same results were obtained in acute articular rheumatism, and all other of the above mentioned febrile affections. The fever was easily abated, but all other symptoms remained; this was eminently the case in tuberculosis. Finally Jaksch remarks, that the sulphate of thalline is the most energetic of the three salts experimented with and recommends its use in all cases of a persistently high fever, where the salts of quinine or salicylic acid prove unsuccessful or are contraindicated. The dose of the sulphate of thalline is 3 grains.—*Wien. Med. Woch.*, 48, 1884.

NOVEL REMEDIES IN DYSMENORRHŒA AND MENORRHAGIA.

Huchard, of Paris, employed for several months the viburnum prunifolium, not only against the pains of dysmenorrhœa, as recommended by Dr. Herr, of Philadelphia, but also as a general tonic of the nervous system. This action, Huchard thinks, is due to its containing considerable quantities of valerianic acid, combined with a bitter principle and tannic acid. Viburnum is used in doses of ($\frac{2}{3}$ grm.) 1 to 3 fluid drachms of the fluid extract or the tincture, and replaces advantageously as an anti-spasmodic the preparations of valerian: Huchard prefers the use of hydrastis canadensis to that of ergot, for uterine irregularities. The drug has, besides, as pointed out by Schatz, of Rostock, decided anti-catarrhal properties. This double action of hydrastis is due to the presence of two alkaloids, hydrastine and berberine. Its value in all catarrhal affections of the alimentary tract, the bladder, the urethra and uterus, is considered as firmly established. In the menstrual disorders it is to be given in doses of 40–50 drops of the fluid extract daily during and preceding the week of menstruation. In dysmenorrhea and menorrhagia Huchard has used hydrastis and viburnum conjointly, with gratifying results, in doses of 10 drops every two hours.—*Journal de Médecine*, Jan. 1884.

JEQUIRITY.

In a paper read before the Clinical Society of Maryland, Dr. Woods (*Maryland Med. Journal*, Jan. 24, 1885), considers some objections which have been made to the use of jequirity, and lays stress upon three points in its use which, it seems to him, have not been sufficiently emphasized. As regards the objections which have been made to jequirity, the two most important are that it produces corneal complications such as ulcers, necrosis, etc., as a result of its action, and that it may produce hard cicatrices of the conjunctiva of the eyelids. These results, however, need not be apprehended, provided the case is one of dry, chronic granulations and the infusion

used is not too strong. It seems to be clearly proved that jequirity should never be used when there is already a purulent discharge, because, under such circumstances, not the specific jequirity ophthalmia is then produced, but a violent increase of the already existing purulent conjunctivitis. It further appears that the pannitic cornea may be treated by jequirity with apparent immunity, while similar treatment of the clear cornea is attended with the greatest peril. The vascularity of the cornea may have something to do with this; thus it has been found that in diphtheric purulent ophthalmia, those eyes are safest in which there exist either vascular ulcers of the cornea or a vascular pannus, nutrition of the cornea being carried on by the blood-vessels upon its surface. It is possible, therefore, that these abnormal blood-vessels serve some such purpose in a severe croupous ophthalmia produced by jequirity. Many clear corneæ have, however, passed through a jequirity ophthalmia unharmed. Still, there is unquestionably necessity for great care in such cases. The diagnosis of trachoma must be certain, and then the drug must be used in weak infusion, and its effects carefully noted before applying it again.

As regards the danger of producing conjunctival cicatrices, it is almost impossible to determine how much of the cicatricial tissue is due to the original disease and how much to the remedy; since when the normal conjunctiva has been treated with jequirity, not the slightest trace of it in the shape of scars remains if the inflammation has not been severe; but if it has been intense and of long duration, the scars are only faint whitish streaks upon the conjunctiva of the eyelid. It therefore appears that this complication need excite no uneasiness, since it is rarely necessary to make inflammation intense, and its duration can generally be regulated by the surgeon.

The three points in the use of jequirity which Dr. Woods especially considers are:

First—The slow absorption of granulations after the acute inflammation has subsided.

Second—The possible dangers in pushing jequirity in eyes not susceptible to its influence; and:

Third—The bad results which may follow a too hasty attempt to reproduce a jequirity ophthalmia.

As regards the first of these points, it is stated that in is several weeks before all the effects of the ophthalmia are brought out. A decided decrease in the tension of the eyeball may often be observed. This decrease, according to DeWeckers, is due to the temporary loosening of the scleral tissue favoring filtration, and explaining the clearing up of the cornea by its increased nutrition. It is not impossible that this relaxation in the scar-tissue of the lids may improve their nutrition, and bring about the absorption of the granulations in the same way that the loosening scleral tissue affects the removal of corneal opacities.

Occasionally patients are met with whose eyes are not at all susceptible to the influence of jequirity. The first application fails to produce the characteristic ophthalmia, and though there may be some watery discharge and a little swelling, the membrane is either not formed at all or else is very light and disappears in a day or two. In such cases pushing the application of jequirity will sometimes be successful in producing the characteristic ophthalmia, but in such obstinate cases the utmost care is necessary in using the drug. In some of these cases a thick membrane may finally appear, accompanied by a watery discharge rapidly changing to seropurulent, and this to purulent, while in others the membrane may not appear at all, and the eye only be kept in a state of irritation. While these obstinate cases are comparatively rare, when they do occur, it has been his rule to stop the jequirity long enough to allow all effects of the first inoculation to pass away before making another. And, even further, Dr. Woods reports two cases which show that it is dangerous to produce a second jequirity ophthalmia soon after the subsidence of the first. In these two cases a purulent ophthalmia developed on the application of a two-per-cent. infusion. The following rule should therefore be observed. Do not re-inoculate a conjunctiva until it has become dry either by time or treatment.

TREATMENT OF INGROWN TOE-NAIL.

Improvements in the operations of minor surgery, at least those that cannot be executed painlessly, are certainly to be welcomed. The modus operandi of DR. HAMEL in the case of treatment of an ingrown toe-nail is worthy of being remembered. He first wraps the toe with a roller of India-rubber as with an Esmarch-bandage, thus securing the double advantage of rendering the part bloodless and of producing a certain condition of anæsthesia. He then makes on the dorsal

portion of the toe, two longitudinal incisions, leaving a considerable interspace between; and from each of these incisions—at the base of the nail—he makes two perpendicular incisions reaching to the plantar aspect of the toe. After dissection and excision of the side-portions, he slides the point of a sharp scissors under the nail and divides it in its entire length by longitudinal cuts, one on each side. This leaves a considerable space in the middle of the nail perfectly intact after each ingrown segment on the lateral portions is removed. The wound is then well-washed with water, and after being thoroughly dried, the thermo-cautery is applied. Finally the roller is removed and an antiseptic dressing applied; a perfect cure generally ensues after two weeks.—*Journal de Méd.*, 12, 1884.

COCAINE USED IN THE VOMITING OF PREGNANCY.

The recently published reports of the great anæsthetic and reflex-inhibitory action of cocaine has led Dr. Weiss, of Prague (*Prager Med. Woch.*, 17th Dec., '84), to exhibit the drug in a case of persistent vomiting in pregnancy, after all other attempts at relieving this inconvenient and often dangerous symptom had proved futile. The patient was a woman of 28 years of age, in the third month of pregnancy and of a nervous disposition, anæmic and debilitated. Persistent vomiting had been a constant symptom in her three preceding pregnancies, and threatened this time to result in inanition. Dr. Weiss prescribed:

℞ Cocain. mur. in suff. quant., spir. vin. solut., gr. ii.
Aquæ dest., f ℥ v.

S. Teaspoonful every half hour.

Three tablespoonfuls of milk given after the sixth dose were well borne, likewise a cup of broth with egg after the eighth dose, without the occurrence of vomiting. The frequency of the pulse being increased from 84 to 96, that of the respiration from 22 to 28 per minute, the pupil becoming dilated and the face flushed, it was thought prudent to withdraw the drug after the sixteenth dose, although the patient felt greatly improved, having even just previously enjoyed a meal consisting of chicken-broth, some slices of white chicken-meat, and a glass of Bordeaux wine, without vomiting. Hourly doses of cocaine given subsequently suppressed the vomiting completely, and enabled the patient to regain her former strength. Weiss stating the patient to be of the nervous and hysteric type, and that the drug was announced as a certain cure to the woman, the question arises, whether we have to deal here with an actual specific against persistent vomiting in pregnancy, or whether the moral effect of the drug on the patient is entitled to a prominent consideration in the case. Scepticism is not out of place in therapeutics, but it would appear unwarranted to deny the value of a remedy in the face of immediate and obvious benefit produced by its application. Besides, the well-known anæsthetic and reflex-inhibitory influence cocaine exercises over mucous membranes would, *a priori*, from theoretical grounds, at least, justly advocate its exhibition in cases of vomiting.

Looking over the literature of coca and cocaine, we find that the remedy has been used ever since the 16th century against various affections of the digestive and nervous system, especially by the natives of Peru. Clusius (Exoticorum libri decem.) states that the Indians answered his question, why they were fond of chewing coca, "because it drives away hunger and thirst, strengthens the body and invigorates the mind." Martius, Fränkl, Töpig and Tschudi all agree in the tonic effect of the drug on the nerves of the stomach. Anrep found cocaine to act as a paralyzant of nerve centres and nerve-termini, first lowering, and finally suspending reflex action. Frohnmüller experimented with cocaine to ascertain its narcotic properties in phthisis, hysteria, glaucoma, and rheumatism, but with alleged negative results. Cocaine was first discovered and experimented with by Nieman, in 1859.

It is to be hoped that Dr. Weiss's case will lead to further trials of cocaine, not only in vomiting of pregnancy, but also in other pathological processes where nervous excitation is the causative agency of the affection.

THE NEW TREATMENT OF GASTRIC ULCER.

In the *New York Medical Record* for Jan. 31, 1885, Dr. Henry R. Millard publishes an interesting account of some recent results obtained by Dr. Débove, of Paris, according to his new method in the treatment of gastric ulcer; giving an account of four cases in which a cure resulted. His idea is to spare the stomach the necessity of labor and excessive muscular action, and the stretching and pulling of the new tissue necessary to

the healing of the ulcer, giving it rest; and, as the secretion of the gastric juice cannot be suppressed, to modify the acidity, which, however necessary to gastric digestion, is nevertheless a caustic irritant to the ulcer; and he makes it a practice to use only such food as does not require peptonization in the stomach, or which can be digested entirely in the small intestines. At first Dr. Débove employed a milk diet, but finding that this is sometimes provocative of hæmorrhage from distension of the stomach, he then used with advantage nutritive powders, condensed milk and so forth; and finally he conceived the idea of relieving the stomach entirely of the chemical part of digestion, and neutralizing the acid of the gastric juice by administering the powder of beef and milk or water mixed with the bi-carbonate of sodium. That the gastric juice does not act upon this mixture is shown by the fact that upon removing a portion of it by a tube from the stomach, after a certain time, it is found to contain no peptones. The work of converting albuminous substances into peptones is then taken off the stomach, and the ingesta are passed unchanged into the duodenum, only in a more highly alkalized state, being thus all the more favorably prepared for intestinal digestion. Although in many cases as much as an ounce or more of bicarbonate of sodium may be given without ill effects, in some alkaline cachexia may be produced, and in nearly all the remedy may cause inconvenience from its disagreeable taste and from its giving rise in the stomach to the formation of considerable quantities of carbonic acid gas, causing painful eructations. He advises, therefore, its use in smaller doses when it does not seem to agree with the patient. On account of these objections, lime water, magnesia, etc., were tried, but abandoned in favor of the sodium salt.

In employing this treatment the stomach is first washed out with simple water to free it from acidity, using Débove's modification of Faucher's tube. This operation should be performed by, or under the direction of, the physician himself, on account of a possibility of hæmorrhage being produced. The operation should be suspended if the water is returned tinged with fresh blood, but otherwise continued until what comes from the stomach is quite clear. As to the danger of hæmorrhage from *lavage* it has never occurred in Dr. Débove's cases, but he instances two (which have been published) where it occurred to a fatal extent, and was supposed to have been produced by the *lavage*. At all events, it is a danger that should not be overlooked. Débove usually gives twenty-five grammes of the *poudre de viande* with ten of the bicarbonate of sodium, prepared with milk, so as to be of about the consistence of cream, administering it, when it cannot be taken otherwise, by the tube. That Dr. Débove's ideas are not chimerical is evident from some very remarkable cures which he has effected, three of which Dr. Millard reports somewhat in detail. The most remarkable was that of a woman thirty-nine years of age, who had had for twenty years a gastric ulcer, and during this period had suffered frequently from exhausting hæmorrhages, and, as a matter of course, from severe gastric pains. So imperfectly had her system been nourished for many years that she looked a dried-up woman of sixty-five. She was entirely cured and was able to digest ordinary food; she had been under treatment for nine months. At first, fifteen to twenty grammes of sodium carbonate were given daily, the quantity being gradually increased to thirty—about one ounce.

Another patient was a man forty-five years of age; the gastric ulcer had existed nine or ten months; had been subject for three months to gastric pains and violent hæmorrhages. Is now taking ninety grammes of the *poudre de viande* daily, and six grammes of the bicarbonate of sodium immediately before the beef powder, in a little water. The hæmorrhages have stopped and the pains entirely gone.

The third patient was a woman; the gastric ulcer had existed eight months, with severe vomiting and hemorrhages. Has been under treatment six weeks, and is now quite cured. No restrictions now as to diet. The beef powder and sodium salt were given mixed with milk at the commencement of the treatment.

TREATMENT OF EPISTAXIS.

Dr. Lucas Championniere speaks highly of his mode of treatment of epistaxis, which, we admit, has the advantage of great simplicity and can easily be employed in febrile affections, such as typhoid fever, where this symptom often assumes grave importance. His treatment consists in the introduction into the nasal fossæ, sufficiently highly, of a fragment of a finely cut sponge drenched previously in lemon-juice or vinegar. The patient is then asked to lie on his stomach. On account of this position the blood does not flow off through the pharynx and forms a clot at the point of contact with the sponge,

thus arresting the hæmmorrhage. This procedure is certainly preferable to the plugging of the posterior nares, a delicate, and to the patient inconvenient, operation.—*Journal de Méd.*, 12, 1884.

ACETATE OF LEAD IN HÆMOPTYSIS.

From a series of carefully conducted observations regarding the action of sugar of lead in phthisis by DR. BIEDERT we abstract here his most important opinions and results:

Lead has no favorable influence over the development of the phthisical process as such. The only symptom, the severity of which could always be abated, was the expectoration, which in six cases was reduced from great copiousness to one-half and even one-fourth the original quantity. This effect can justly be attributed to the contraction which lead produces in the small arteries and arterioles. The more important effect of lead of checking hæmoptysis of course depends upon the same power it exercises on the circulation. Biedert does not hesitate to designate the acetate of lead as the most powerful and reliable hæmostatic at our disposal, its promptness and energy having been tested by him with the most satisfactory results in seven cases of phthisis, two cases of chronic and one of acute pneumonia, and in a number of other affections. He insists upon doses of sufficient strength, such as ¾ grain given every two or three hours, until the hæmorrhages stop; if straining and irritative coughs be present, opiates ought to be administered with the metal. In persistently returning paroxysms of hæmoptysis, Biedert advises a prolonged exhibition of the drug in decreasing doses. In a case of nephritis in a small boy, the sugar of lead acted with equal promptness in stopping the bleeding. Biedert states that he has never observed any systemic intoxication in quantities ingested as great as 75 grains. Only in one instance, a case of phthisis, after the use of 90 grains, he noticed decided symptoms of lead poisoning. Hence, this possibility should never be lost sight of in cases requiring a protracted use of the metal.—*Wiener Med. Woch.*, No. 48, 1884.

ON THE DIETETIC FACTOR IN THE TREATMENT OF ANGINA PECTORIS.

DR. N. A. RANDOLPH (*Polyclinic*, Jan. 15, 1884) states that he has recently had under his care a patient suffering from true *angina*, in whom, as is not seldom the case, any slight gastric irritation constituted the immediate exciting cause of the frequently recurrent paroxysms.

After the last attack there existed an inability to retain the lightest and simplest foods, their ingestion inducing not only nausea, but much cardiac distress. Recourse was had, with advantage, to milk, partially digested by the commercial extractum pancreatis; but the flavor of the resultant preparation was unappetizing, and finally became repulsive to the patient, who whimsically described its taste as that of "stewed corpse."

To meet this emergency, there were devised two food products, which have not been described, and which, in practice, proved eminently satisfactory.

1. *Pancreatized Oysters.*—The oysters of an ordinary stew (containing milk) are removed and finely minced, then returned to the liquid portion of the stew. The whole is brought to a temperature of 100° F., the appropriate proportions of pancreatic extract and sodium bicarbonate are added, and the mixture maintained at the temperature mentioned for thirty minutes, with occasional stirring. It is then strained and served, and forms not only a highly nutritious and palatable soup, but one which is retained by very irritable stomachs, and utilized with a minimum of digestive power. After boiling, to prevent the further action of the digestive ferment, gelatine may be added, and the mixture served cold, as a jelly. Cooked tomato, onion, celery, or other flavoring suited to the individual taste of the patient, may be added at the beginning of the artificial digestion, and the solid residue removed in the final process of straining, at which time it will be noticed that the minced oysters originally added have been in great part dissolved.

2. *Pancreatized Milk-Toast.*—Ordinary milk-toast, in which there is an abundance of milk, when digested in the manner just described, becomes an almost homogeneous, pulpy mass, which, when the crusts have been removed, is usually acceptably retained by the irritable stomach. In extreme cases, however, it may advantageously be strained and the fluid portion alone used, in which the partially peptonized solution of casein of the milk is reinforced by actually digested gluten and starch of the bread, together with a very little dextrin. Plain, light sponge cake may be similarly digested, and occasionally forms a desirable change.

PHYSIOLOGICAL ACTION OF HYDRASTIS CANADENSIS.

FELLNER finds in his carefully conducted experiments with the fluid extract of hydrastis canadensis, that when administered to dogs by intra-venous and subcutaneous injections, or by the mouth or rectum, the drug has a very pronounced action on the vaso-motor system. The vaso-motor centres, he states lose their irritability. The blood-pressure is lowered after a momentary rise, and, if the dose be not suffcient, the rise of the blood-pressure is the only phenomenon observable. The beats of the heart become slow, and after large doses irregular, effects that do not appear, however, if the vagi nerves be cut. It is peculiar, that the uterine contractions, which the drug produces, coincide with the oscillations of the blood-pressure.—*Centralb. f. d. Med. Wiss.* No. 29, 1884.

FACIAL NEURALGIA TREATED BY NERVE VIBRATION.

Facial neuralgia is such a painful disease that patients will submit to almost anything to obtain relief from their sufferings, and stretching nerves in the treatment of this affection has accordingly become quite an every day procedure, and in many cases has been followed by satisfactory results. At the same time, one is naturally anxious to try every simple means of relieving pain, before advising one's patients to submit to such an operation; and the case reported by DR. W. H. NEALE (*Practitioner*, November, 1884), in which success was obtained by nerve vibration renders it worthy of being recorded. The case was that of a policeman, 35 years of age and of temperate habits, with no history of specific disease, and who attributed his neuralgia to exposure to rain. For six years he had suffered almost constantly from severe facial neuralgia on the right side, and almost every drug in the pharmacopœia had been used without giving any permanent relief. All drugs were therefore abandoned and percussion was given a trial, a small flat ivory disk, with about 90 vibrations to the second, being used, and applied at the most tender point in the right parietal region. The pain was intensified at first but after about five minutes constant application the pain was gradually relieved, and in two or three minutes more was entirely absent. The disk was then moved along the forehead but no painful spot was found until it was placed under the right eye, just over the infra-orbital foramen. At this spot the patient complained of severe pain, and the right side of the face was drawn up for more than a minute. The muscles then gradually relaxed, and the pain soon disappeared. The disk was continuously applied until all pain had quite left. The patient was after this entirely free from pain for six hours, but he then thinks that he suffered as much if not more than usual. After this the percuteur was applied daily for two weeks to the various tender spots found out by running the percuteur lightly over the skin. When the spots were touched the patient immediately called out, and the application was continued until the pain died away. The improvement from the commencement of the treatment was almost constant; however, there were several severe relapses, during which the sufferings were even more severe than before the treatment was commenced. But after the applications had been continued for two weeks, the patient was entirely cured, and four months after this he reported as having been for all that time entirely free from pain.

ACTION OF BROMIDE OF ZINC.

Recent experiments instituted by DR. TESTA have led their author to the following seven conclusions:

1. Bromide of zinc produces in small doses as first effect a diminution of sensibility; in larger quantities it depresses the motor apparatus, achieving finally complete paralysis.

2. The motor and sensitive embarrassments disappear gradually, provided the quantity of the drug administered be not too excessive.

3. Bromide of zinc arrests the heart of a frog in its diastole, but more slowly than zinc alone.

4. This effect is the more attributable to the zinc, as other bromides, the bromide of potassium for example, act simultaneously on motility and sensibility.

5. Bromine, associated with zinc, causes in different mammals great somnolence, which zinc alone is incapable of producing.

6. Bromide of zinc acts primarily on the peripheral extremities of the sensory nerves, and secondarily on the spinal cord and the efferent nervous branches.

7. The somnolence seems to refer to a cerebral difficulty, but the phenomena observed in the sphere of sensibility and motility are distinct appearances.—*Revista Clinica e Therapeutica.*

KERATIN PILLS.

Various attempts have been made to conform with the desideratum of preparing pills with such an investment as would allow of their passage through the pyloric orifice and their subsequent solution in the small intestines. Collodium did not answer as a coating, being too tough to secure the solution of the pills even in the intestines; again, paraffin, wax, tallow, cacao were too soft to reach the desired parts.

The keratin coating, as prepared by DR. UNNA, of Hamburg, from chips off the horns of oxen and buffalos by a digestion in artificial gastric juice, *i. e.*, pepsin and muriatic acid, or by a prolonged maceration in ammonia, is positively insoluble in gastric juice as in any other acid except acetic and citric acids, but yields readily to the alkaline juices of the small intestine. Keratin pills hence are advantageously applicable in cases where the stomach is to be protected from the pill or *vice versa*, the pill from the gastric juice, cases in which hitherto the clysma or the hypodermic injection were resorted to. Especially indicated, therefore, are the keratin pills in the exhibition of drugs, which, when persisted in irritate the mucous lining of the stomach, such as arsenic, salicylic acid, the salts of iron and phosphorus: or which, reacting on pepsin and peptones, interfere with digestion, such as tannic acid, acetate of lead, nitrate of silver, iodide of iron, or finally where the action of a drug is exclusively desired for the small intestines, such as in the use of all anthelmintics.—*Winer Med. Woch.* 49, 1884.

HAY-FEVER AND ITS SUCCESSFUL TREATMENT.

At the last meeting of the American Laryngological Association, DR. CHARLES SAJOUS read a paper upon the treatment of hay-fever (*New York Medical Journal*, December 6, 1884), in which he states that he accidentally found that organic alteration of the hypertrophies which are often found on the turbinated bones in cases of hay-fever will result in curing the disease. He was first led to this by the treatment of growths on the turbinated bones by extirpation and by applications of acetic acid. It happened that the case in which these operations were performed had previously been subject to hay fever, and when the time came for the hay fever to manifest itself, the symptoms did not recur; he was therefore led to try this method of cautery of hypertrophied tissues on the turbinated bones in several cases, and his results have led him to believe that such a method of treatment will in many cases be followed by cure. He summarises his conclusions as follows:

That hay-fever is an idiosyncrasy existing in certain individuals, to become influenced by certain emanations of irritating substances.

That the idiosyncrasy is accompanied by a chronic hyperæsthesia of that part of the nasal mucous membrane covering the inferior and middle turbinated bones, the middle meatus, the floor of the nose, and that part of the septum below the limit of the olfactory membrane.

That organic alterations of those parts annuls that hyperæsthesia, preventing at the same time what symptoms the patient may be liable to in the course of an access.

That any destructive agent will induce that organic alteration, but that the galvanic cautery is by far the best, being painless, effective, and devoid of all danger when used in practiced hands.

That, in order to obtain a satisfactory result, a sufficient number of applications must be made, covering the entire extent of the over-sensitive surface, without which the result will be doubtful.

These conclusions were also confirmed by Dr. Roe, of Rochester, who obtained similar results from entirely independent studies.

EXTRACT OF PISCIDIA.

SIFERT publishes seven experiments made with the extract of piscidia in six cases of phthisis and one of bronchitis in an emphysematous patient (*La France Médicale—Centralblatt f. d. ges. Therapie*). A woman, sixty years of age, affected with the latter respiratory trouble was unable to sleep at night on account of intense, lancinating pains. The administration of six-grain doses of the solid extract of piscidia succeeded each time in calming the pains sufficiently to permit of sleep toward morning, when a change of position, however, would cause the pains to return and to interrupt sleep for an hour or two. There was an entire absence of all unpleasant accessory symptoms. Of the six phthisical patients, three obtained but little benefit from the drug, while three others were so completely relieved of their pains that they were enabled to enjoy an uninterrupted and refreshing sleep, without experiencing any undesirable effects from the drug. In one case

the complete disappearance of very troublesome night-sweats following the administration of piscidia was very notable. A number of other German physicians, such as Elenz, Flach, Meidert and Schmitt, also testify to the value of piscidia as an hypnotic. In three cases of neurasthenia, in which 75-grain doses of bromide of sodium had failed, piscidia produced the desired effect. Fisher obtained good results with the fluid extract of piscidia in two cases of nervous insomnia, the dose administered being a fluid drachm, while in another case the drug showed no effect whatever. In a number of phthisical cases experimented upon with piscidia by Dr. Fisher, piscidia acted with sufficient promptness in the majority of cases to justify its further trial. At all events, the new hypnotic, although less energetic than opiates, does not to any marked degree share the objectionable features of the latter.

BIPOLAR FARADISATION OF THE UTERUS.

The application of the induction-current in the treatment of uterine affections, though not yet having received what might be termed official sanction, *i. e.*, endorsement of all men at the head of the gynæcological practice, is undoubtedly coming into a more general use. Duchenne was the first to propose bi-polar Faradisation; Tripier, also following him, advocated its use, and Apostoli, of Paris, has the merit of so modifying this somewhat painful procedure as to allow of its general application. The old method, as practiced by Tripier, was exceedingly painful on account of the interruptions of the current, caused by the movements of the external pole on the sacrum or pubic-region, but Apostoli introduces both poles, separated by an insulating ring, into the uterus, and thus avoids any interruption of the current. The contractions so obtained were more powerful and less painful than those of the old method. He also found that the pain was more intense when the internal os was not passed, but ceased when both poles were fully introduced into the uterine cavity. Apostoli has obtained with his method very satisfactory results in metritis, uterine muscular laxity and hæmorrhage.—*Zeitschr. f. Therapie*, 24, 1884.

A PAINLESS ESCHAROTIC.

Under this title Dr. N. A. Randolph and Mr. S. G. Dixon describe in the *Medical News* Jan. 24th, 1885, some experiments which seem to prove that, in addition to its power of dulling the sensibility of mucous membranes, cocaine may also serve to nullify the pain caused by acids when used as caustics.

When a saturated solution of cocaine hydrochlorate in strong nitric acid is applied to the uninjured skin, the ultimate result is stated to be precisely that which would occur upon the similar application of pure nitric acid, but the time required for the formation of a deep eschar is considerably longer in the former than in the later case.

The authors state that they have experimented with the mixture just mentioned upon several individuals, themselves included, and can safely say that the sensations attending its application cannot be accurately described as painful. There is, however, a slight pricking sensation soon after the mixture is first dropped upon the skin.

PSEUDO-TABES CAUSED BY SULPHIDE OF CARBON.

Berbes, of Paris, in a communication to the Clinical Society of Paris (*La France Médicale*, Jan 1, 1885), reports the case of a laborer, handling large quantities of sulphide of carbon, who presented symptoms of cerebral congestion, motor troubles and hyperæsthesia of the skin, with finally ensuing complete paraplegia lasting two months. The powers of coördination became almost entirely absent, while the perversion of sensibility reached a remarkable degree ; and the sexual apparatus wholly lost its functional activity. Besides, darting pains in almost all regions of the body, but chiefly in the cardiac zone, where mitral insufficiency was found, were constantly present. It was obviously a case of tabes produced by intoxication with the sulphide of carbon, the patient improving within a couple of months under the influence of purgation and nervous stimulation.

THE USE OF ERGOTIN IN DISEASES OF THE LUNG, ESPECIALLY IN PNEUMONIA.

As is well known, the principal action of ergot is manifested on the unstriped muscular fibres, and Dr. Sunol shows that while this property possessed by ergot is used with advantage in diseases accompanied by vascular alterations, or by paralysis of various muscular organs, it may also be used with great success in various acute affections of the respiratory apparatus. Thus in acute intense bronchitis where there is difficulty of expectora-

tion, and also in hæmoptysis, it serves a useful purpose in emptying the blood vessels and contracting the bronchial muscles. Its effects are also excellent in certain complications of pneumonia, such as collateral congestion, and when the sputa are rather hæmorrhagic than rusty. When used in such cases, according to the author, the dyspnœa is relieved, the temperature falls, expectoration is more easy and the delirium is less. Pregnancy is not an absolute contra-indication, provided the dose is not excessive. In pulmonary engorgement it may take the place of bleeding, though it has little influence on the duration of the disease, its only advantage lying in its power of correcting the complications. The indications for its employment therefore are symptomatic, but the benefit derived from it when thus employed is incontestable.—*London Med. Record*, Dec. 15, 1884.

TREATMENT OF SPRAINS OF JOINTS.

PROF. STARKE (*Deutsche Medizinal Zeitung*, December 29, 1884) condemns the use of the ice-bag in the treatment of sprains, with a view to stop the subcutaneous bleeding, as the cold never penetrates to the deeper structures and the contraction of the vessels, caused by the cold, is soon followed by an undesirable reactive dilatation with profuse transudation of lymph. If the sprain is left to itself, the stoppage of bleeding takes place by a process of natural tamponage exerted by the pressure of the surrounding soft parts. This salutary counter-pressure can be easily produced by Martin's elastic bandage, which not only stops the hæmorrhage, but also distributes the extravasations over a large space and thus greatly favors resorption. Besides, the bandages replace the torn and displaced parts and thus afford a protection against the sudden violent pains caused by the movements of the limb. Elevation and massage will be found useful adjuvants to this method of treatment. Immobilization of the parts by plaster-of-Paris is indicated in very grave cases as soon as the normal configuration of all structures is perfected, but has to be carefully counteracted later on by massage and voluntary motion on the part of the patient. Warm water douches and electricity will nearly always accomplish a successful termination of the cure.

ON LIFE SAVING FROM DROWNING BY SELF-INFLATION.

DR. HENRY SILVESTER, who is widely known as the author of the best method of resuscitation of the apparently drowned, publishes in the *Lancet* of January 3, 1885, a method which he claims will prevent persons from drowning. The method which he proposes is to distend the skin of the neck and upper part of the chest sufficiently with air to support the weight of the body when immersed, the inflation being effected by the person himself by means of his lungs without the intervention of appliances. The necessary operation consists in making a small puncture, not larger than necessary to allow of the passage of a small blow-pipe, in the mucous membrane of the mouth, the object being to open a communication for the passage of air from the cavity of the mouth into the subcutaneous space of the neck. The situation chosen for the puncture is in the angle formed between the gum of the lower jaw and the side of the under lip or cheek, about opposite the first molar tooth of the lower jaw. The point of the instrument perforating should be passed down a short distance between the skin of the side of the face and the superficial fascia of the neck, its point being guided by the finger placed on the outside of the face and neck, taking care not to puncture either the skin or the superficial fascia. This having been done and the instrument removed, in order to inflate the skin of the neck and the chest, the person should close the mouth and the nose, and make a succession of forcible expiratory efforts, when the air contained in the cavity of the mouth will pass freely into the subcutaneous tissue of the neck. These expiratory efforts, inspiration being effected through the nostrils, should be continued until the skin is fully distended with air, which will pass readily to both sides of the neck and down the chest as far as the nipples; and this is all that is required to render the body buoyant in water. Should it so happen that the superficial fascia has been punctured and the air pass beneath it, the only difference in effect would be that the extent of air would be limited by the attachments of that membrane to the clavicle below and the border of the jaw above. The amount of air which the skin of the average neck is capable of holding without undue distension has been measured, and found to be enough to support ten pounds, and is amply sufficient to support the body immersed in water. The time required for inflation is found to be less than three minutes. The neck may be kept in an inflated condition by closing the puncture by pressure on the outside of the cheek by the finger, or

by keeping the mouth distended with air; and when required the air may be immediately discharged from the neck by allowing the puncture to remain open, or by suction.

The advantages which Dr. Silvester claims for this method may be summed up as follows:

1. The proceeding is perfectly harmless and almost painless, quickly done and almost immediately recovered from.

2. It may be learned in a few minutes, no technical knowledge being required, and may be accomplished by the person himself without assistance.

3. No special apparatus is required. In an emergency the point of a pen-knife, or even a sharp-pointed splinter of wood, is all that would be required. The inflating apparatus is the person's own lungs.

4. The air could be repeatedly re-inflated, and even during prolonged immersion.

DESTRUCTION OF FŒTUS BY MORPHINE.

Cases of extra-uterine pregnancy confront the physician whose sole office ought to be to save life, with the occasional necessity of destroying life, viz: that of the fœtus.

Laparotomy, electricity, or the making of a direct incision into the fœtal mass have all been proposed with this end in view. A preferable method, viz: subcutaneous injections of morphine, is being practiced by Dr. Rennert, of Frankfort on the Maine, who reports a case of extra-uterine pregnancy of the fifth month treated in this manner (*Deutsche Medizinal Zeitung*, December 29, 1884) with successful termination. The position of the fœtal head having been determined, an injection of fifteen drops of a three-per-cent. solution of morphine, with a few drops of a five-per-cent. solution of carbolic acid, was made into it. The mother experienced no pain during the procedure, but one hour after, violent movements of the fœtus took place, which entirely ceased in about twelve hours, the fœtal mass gradually discharging itself through the vagina, though not without causing pain and febrile symptoms to the mother. Within two months the woman recovered completely. This is the fourth case reported in which morphine injections were successfully employed for the destruction of the fœtus.

THE TREATMENT OF FRACTURE OF THE FEMUR WITHOUT SPLINTS.

Dr. D. B. Van Slyck (*Boston Medical and Surgical Journal*, Feb. 8, 1885) states that for more than twenty years he has been treating all cases of fracture of the femur coming under his care without splints of any sort, and with results more satisfactory than by the old method with a Liston splint, or any of its modifications. The method of treatment which he has employed solely in the fracture of the thigh is as follows:

The bed should be at least two feet longer than the patient. For children, and many people below medium height, any ordinary bed with hair mattress is sufficient. For adults of ordinary stature, he recommends a sort of bunk, or bedstead of plain boards, which a carpenter could make in an hour. It should be about eight feet long, and of a width to fit whatever mattress may be most convenient, though the width of a single bed is better. The side pieces may be about a foot wide, and the foot- and head-boards as much wider as desired. Thin strips of board in the corners for legs, coming up to the top of the side pieces; cleats on the side pieces to support the cross slats; and all put together with screws or wrought nails, will make a very simple and easily constructed bedstead; and with a firm, smooth mattress on this, everything is ready for business.

Now, for an adult, take a strip of adhesive plaster three inches wide and long enough to reach from the knee down the outside of the leg and back on the inside, leaving an ample loop below the foot. On each side of the plaster tear a narrow strip about three-fourths inch wide down to the malleoli. Apply the middle strips on each side of the leg, and the side-strips spirally around the leg over them, so that the traction may be distributed as much as possible around the leg, and draw evenly. This is a matter of some importance, as a single strap at the sides is apt to pull off the skin before the treatment is ended. For the perineal band he uses a piece of one and one-quarter or one and one-half inch rubber tubing, though the usual band made wide answers well enough. The tubing is easily kept clean, and soft cotton may be kept under it to prevent chafing, and changed when soiled. Tie to each end of about a yard of this tubing, strong cords, which are to be passed through a hole in the head-board and tied around a bit of wood. At the bottom of the foot, between the strips of plaster, place a short piece of lath, or a bit from a cigar box, of proper length to prevent pressure on the malleoli; tie a strong cord around the middle of the loop of plaster, and pass the two ends through a hole in the foot-

board. Now place the patient so that the extension, counter-extension and shaft of the femur are in line, reduce the fracture, and secure the cord at the foot as has been already done at the head of the bed. A couple of sand-bags on each side will keep the foot in place, with the proper eversion of the toes; and two half-hoops from a small butter-tub, wound and fastened in the middle, and placed over the foot, will protect it from the pressure of the bed-clothes. If the sand-bags do not secure sufficient eversion of the toes, a bandage around the foot fastened to one of the hoops will accomplish this purpose.

In the first stage of the treatment, but little more extension is needed than is necessary to overcome the spasmodic contraction of the muscles. After the process of repair has fairly begun—say after ten or even fifteen days—the provisional callus is still soft and plastic enough to afford ample time to secure the proper length of the limb by gradually increased extension, while in the meantime the patient has become accustomed to confinement and the perinæum toughened and prepared for the increased pressure. If necessary to prevent excoriations, the foot of the bed may be raised and a weight and pulley arranged at the foot, and the counter-extension taken off during the daytime. But this should be only a temporary expedient. As a mode of treatment Dr. Van Slyck considers the weight and pulley, or any elastic extension, objectionable, for the reason that they do not prevent the spasmodic contraction of the muscles, and it is impossible by this means to graduate the extending and counter-extending force so as to correspond to the actual resistance. In the treatment described you can measure the limb as often as you please, and have only to tighten the foot-cord to keep the injured limb of absolutely the same length as the other, and it is a very easy matter to keep it so.

URTICARIA AND HAY FEVER.

Dr. Mussy made some interesting remarks in the meeting of the Therapeutic Society of Paris, held on the 12th of November, '84, respecting the relations existing in his opinion between urticaria and hay asthma, and declared hay asthma to be caused by an urticaria-eruption of the bronchial mucous membrane. Among other cases, he reports that of a young woman suffering from pharyngitis, rhinitis with asthmatic attacks, and simultaneously returning urticaria-eruptions. Jaborandi given in small doses and long continued was found to give prompt relief. He has successfully prescribed the following:

℞ Fol. jaborandi pulver.
Extr. guaiaci, ää gr. xviii.
Lithii benzoici, gr. xxxvi.

M. Fiant pil. No. 12.
S., one four times a day.

CARBOLIC ACID IN PURULENT AFFECTIONS OF THE CONJUNCTIVA AND CORNEA.

Mr. G. Herbert Burnham publishes in the *Canada Lancet* (Feb. 1885) the results of his treatment of gonorrhœal ophthalmia with a 5-per-cent. lotion of carbolic acid. He states that he has tested the merits of this method of treatment in all the various forms of gonorrhœal ophthalmia; in that with much serous chemosis and swelling of the ocular and palpebral conjunctivæ; in that where the œdema is as great, but harder and denser; in that where the conjunctiva of the eyeball and eye-lids and the sub-conjunctival tissue are so fully loaded with exudation as to give the brawny, mottled look of diphtheritic ophthalmia. Under the use of carbolic acid Mr. Burnham states that the transparent excavations quickly heal, and, moreover, have never since he began its use, progressed to perforation, as was formerly so often the case. The same may be said also with respect to this method of treatment of other forms of corneal ulceration, with the single exception of that in which there is a deep, circumscribed infiltration of the cornea with the external surface unabraded. Here the morbid process goes on extending inwards till hypopyon occurs. After this the external surface ulcerates, and then the part is so weak that more or less perforation of the cornea and entanglement of the iris takes place. In such cases the powerlessness of carbolic acid is due to its inability to reach the seat of mischief.

One of the great advantages of this carbolic acid treatment of ophthalmia lies in the ease with which it can be applied. As is well known, in the worst forms of ophthalmia, the lids are so swollen and stiff that only very partial or even no eversion can be made. This prevents the proper application of other forms of treatment, such as strong solutions of nitrate of silver or of the pure stick caustic. The carbolic acid lotion, however, travels with great ease below the lids and hunts out, as it were, all the obscure

places. The course which he pursues in the case of gonorrhœal ophthalmia is as follows:

The patient is ordered to bed, and then there is placed at his bedside a large basin of ice-water, with which the eye is to be frequently bathed, so as to well cleanse it, while cloths wet in the ice-water are constantly to lie upon the closed eyelids. A carbolic lotion of the strength of one part in twenty is to be thoroughly and freely applied every hour, the lids being as well everted as possible, and the patient at the same time directed to cleanse the eye as well as possible. These applications are to be made night and day. The pain and smarting which follow the use of the carbolic acid last but a few seconds, and are succeeded by a feeling of comfort and relief. Mr. Burnham also recommends this mode of treatment in other purulent affections, especially where the cornea is implicated, as in purulent infiltration of the corneal wound after the extraction of cataract.

THREE NEW LAXATIVES: CASCARA SAGRADA, EUONYMIN, AND IRISIN.

Dr. Senator, *Wiener Med. Bl.*, 8th Jan., '85, speaks favorably of three new laxatives introduced by American physicians, viz.: cascara sagrada, euonymin and irisin.

The tincture of cascara sagrada, prepared from the bark of rhamnus Purshiana, indigenous to Oregon and California, produces perfectly normal and solid stools without irritating the intestinal mucous membranes. Its action is prompt and harmless even after a protracted use. The dose is half a teaspoonful for an adult, twice or three times daily, if a moderate action only be required; it is scarcely sufficiently bitter to call for a flavoring vehicle. Its proper place in the pharmacopœia is between rhubarb and senna, but has the advantage of acting in smaller doses than either of them.

Euonymin, an alcoholic extract prepared from euonymus atropurpureus, must be regarded as an energetic laxative and cholagogue. Rutherford, who examined its physiological action experimentally on dogs, finds the drug to exercise a powerful stimulation on the peristaltic movements of the intestines and the biliary secretion without irritating the mucous membranes to a higher degree than the milder acting laxatives do. It cannot be taken in continuation on account of its drastic action, and is to be placed in a line with podophyllin, with which it shares equality in action and dose.

Irisin, an extract prepared from the root of iris versicolor, also resembles podophyllin closely in action, but requires nearly double the dose of the latter.

THE SUPPOSED ACTION EXERTED BY THE ANTAGONISM BETWEEN ACIDS AND ALKALIES IN MODIFYING THE TONICITY OF THE HEART AND ARTERIES.

There are two forms of muscular contractility which are called into play during the functional activity of the heart and arteries; the one form is quick, of brief duration, while the other is persistent. This latter form is designated the tonicity of the heart muscle and arterial muscles. Although they occur in the same structure, these forms of contractility offer differences alike in nature and function. In function, while the quick rhythmic contraction subserves the purpose of propelling the blood, the slow persistent contractility determines the actual capacity of the heart and vessels. Both forms of contractility are influenced by central and peripheral conditions. Thus the arteries can be contracted or dilated by central vasomotor influences. Again, the arteries are subject to local or peripheral influences, which act either through a hypothetical vasomotor controlling system, situated in the vascular walls; or directly, as by the action of the circulating medium upon the muscular walls of the containing vessels.

Dr. Gaskell has shown that acids and alkalies, when allowed to circulate in contact with the interior of the heart and arteries, exercise a powerful influence upon their tonicity.

From his experiments it appears that the diluted alkaline solution acts upon the muscular tissue of the heart and arteries in such a way as to bring it from a position of relaxation to one of contraction, and that according to the stage in this alteration of the contractile tissue, so will be the nature of the beat produced by the ventricle. The effects of acids were exactly opposite to what took place with the alkaline solution; and Dr. Gaskell claimed that the heart brought to rest in systole by an alkali was completely relaxed by the acid; and conversely, the heart brought into the condition of relaxation by the action of the acid, passes into extreme contraction when an alkaline fluid is allowed to circulate.

Taking up this subject at this point, PROF. SIDNEY RINGER and DR. DUDLEY BUXTON (*Lancet*, Jan. 3, 1885), show that substances other than acids may take on a rôle similar to the one performed by acids. Thus, they claim that the salts of potassium can act quite similarly to acids in so far as antagonism of the effects of sodium alkaline salts is concerned. And they report a number of experiments which show conclusively that the addition of the potassium salt can prevent the appearance of tonicity even when large doses of sodium bi-carbonate are present; doses far larger than exist in the blood physiologically or could be administered therapeutically: and that the tonicity once induced by sodium bi-carbonate can be completely overcome, relaxation replacing it, when potassium chloride is added in physiological doses. It would appear, then, that even if the alkalinity be a factor in promoting cardiac and vascular tonicity, it cannot, however, be asserted that the presence of the acid, or an acid tendency is a physiological antagonist in the body where all cardiac tonicity is lessened or annulled. All that can be admitted is that the hypothetical production of the acid condition, or rather of the lessened alkaline condition of the blood, may be instrumental in lessening cardiac tonicity. The authors, however, seem to be skeptical as to the influence exerted upon the tonicity of the blood-vessels and heart by the variation in the alkalinity of the blood, and they suggest as a possible explanation, that the action of the alkaline bi-carbonate of sodium upon the muscle, causing the condition called tonicity, is at bottom a sodium effect.

On this supposition we would naturally expect to find that as the sodium became more or less chemically saturated, so would its effects become more or less marked.

To sum up, the authors find from their experiments that the tonicity of the heart and vessels produced by alkaline solutions of sodium salts, such as are present in normal blood, will not only not appear in the presence of an acid, but will not be induced in the presence of potassium chloride; hence it is inconceivable how in the teeth of the fact that large quantities of this salt, potassium chloride, exist in the blood, the tonicity of the heart and arteries can be due to varying degrees of alkalinity. And they further find the alkalinity of the solution does not determine its power of producing tonicity in the muscles of the heart and smaller vessels, and so they suggest that this result may accrue from the degree of chemical saturation of the sodium present in the sodium salts.

ATROPINE IN SEVERE ELECTRIC SHOCK.

The rapidly growing use of electricity for illuminating and various industrial purposes cannot but lead to an increase in the frequency of cases of electric shock, and as no suggestions can be found in our text-books as to the treatment of such cases, an account of three instances reported by DR. WILLIAM E. EGGLESTON, (*Medical Record*, January 1st, 1885), in which atropine was sucessfully used, is well worthy of notice. The first of these cases was that of a young man who was struck by lightning; the fluid entering as nearly as can be determined in the region of the right temple, passing thence to the left iliac region and thence to the floor. He rose, walked to the door, stopped, caught hold of the door-frame, did not answer when spoken to and began to stagger. He was caught while in the act of falling, laid on the floor and immediately became insensible. When seen by his physician twenty minutes later he was cold, insensible and limp, pulse and respiration very slow, and the pupils widely dilated. There was no mark on his body or clothes. He was immediately put to bed and thoroughly warmed, $\frac{1}{80}$ of a grain of sulphate of atropine being injected hypodermically. Within a short time after the injection, both the respiration and pulse became more frequent, but it was necessary to repeat it in about two hours, and again in two-and-a-half hours. An attempt was made to administer stimulants by the mouth, but the act of swallowing seemed to produce a spasm of the pharyngeal muscles and general convulsions. Stimulants were administered by enemata. Consciousness returned in about six hours, when the patient complained of pain in the head, down the right arm into the left iliac region and excessive photophobia. On the next day he had a hæmorrhage from the bowels, which seemed to indicate that the electric fluid had caused a rupture of some vessels in the iliac region, where it passed from the patient's body. He also complained of violent headache, but perfect rest and confinement in a dark room produced in a short time decided change for the better in the cerebral and ocular symptoms, though they did not entirely pass away for more than three months.

The second case was that of a young man who received a shock from a dynamo-electric machine. He walked ten steps, said that his

arms and hands felt dead, and then became unconscious. When first seen, about ten minutes after the accident, the hands and fingers were strongly flexed, the head forced back, the pupils dilated and insensible to light; respiration jerking and gasping, shallow and very slow, and pulse slow and irregular, though not very feeble, and the patient almost entirely unconscious. Sulphate of atropine was given subcutaneously in a dose of $\frac{1}{100}$ grain, and within twenty minutes the respiration and pulse became more frequent, and the patient so far recovered consciousness as to be able to swallow some brandy and water. An hour and a half later the respiration and pulse again became irregular, and the injection of $\frac{1}{80}$ of a grain of atropine was again followed by improvement in twenty minutes. He then steadily improved, and beyond a slight weakness and curious feeling about the head there were no unpleasant after affects.

The third case was that of a man who received a shock by coming in contact with an electric light wire. He was limp and unconscious; occasional contractions of the hands and fingers; pupils widely dilated; respiration shallow, jerky, slow and sighing; pulse irregular, very slow and feeble; $\frac{1}{80}$ of a grain of sulphate of atropine was injected subcutaneously, and, as in the other cases, resulted in rapid improvement; though here, also, a second injection was required to counteract a second relapse. Unconsciousness and pharyngeal spasms were so marked in this case that swallowing was absolutely impossible, and brandy and ammonia were injected into the arm. For more than a week afterwards he complained of photophobia and frontal headache, and great weakness of his limbs; but within three weeks these had so far disappeared as to give him no trouble.

ERGOT.

Ergotinic acid, sphacelinic acid and cornutine are the active principles of ergot, according to Dr. R. Kobert. Ergotinic acid, even in large doses, does not produce very marked effects. Sphacelinic acid is a very powerful poison, the amount obtained from thirty grammes of ergot being sufficient to kill a fowl, and that from two hundred grammes to kill a small pig, death resulting from gangrene; this principle is probably the cause of the gangrene which sometimes attends the use of rye bread containing ergot. It causes a tetanic action on the uterus. Cornutine is the only energetic alkaloid that occurs in ergot. The ergotin of Tanret has no physiological effect according to Dr. Kobert; but five milligrammes of cornutine causes salivation, vomiting, diarrhœa, and active movements of the uterus in warm-blocded animals, as well as contraction of the blood-vessels and a rise in the blood-pressure. The latter effects are also produced by sphacelinic acid. The only preparations which should be used are those containing these two principles.—*Lancet*, Jan. 3, 1885.

THE TREATMENT OF SCARLET FEVER BY SCALDED OAT-MEAL.

As is very well known, the process of desquamation which follows scarlet fever varies very much in different individuals; sometimes it is accomplished by particles so fine as to be hardly perceptible, and these are a very frequent and certain source of contagion by means of clothes and otherwise, much more so than the scales as ordinarily thrown off. It is evident that this being the fact, it must be much more difficult to prevent a contact and consequent contagion with these fine, almost imperceptible scales which are floating in the atmosphere, than where desquamation occurs in large patches of skin. To obviate this danger, Mr. George Smith, of Somerset, England (*Bristol Med. Chirurgical Journal*, Dec., '84), states that he has for several years been in the habit of having his patients well sponged over the surface of their bodies, commencing, as a rule, about a week after the appearance of the eruption, and continuing the process until desquamation is complete, with a mixture of one ounce of oat-meal to a pint of boiling water. The solution to be made fresh every day, and used tepid, or at such a temperature as may be comfortably borne by the back of a finger. His reason for using this particular combination is that the gluten in it sticks the scales to each other and to the surface of the body, thus allowing of their being removed from one sponging to another without the ordinary risk of infecting either atmosphere or clothes, and thus greatly lessening the risk of spreading the disease.

Secondly, the gluten fills up the cracks of the new skin and protects it from cold, as patch after patch of it becomes bare, and it thus, to say the least, greatly lessens the risk of the dropsy which so often follows upon this disease.

THE USE OF JAMAICA DOGWOOD IN NEURALGIA FOLLOWED BY UTERINE HÆMORRHAGE.

In the *Southern Practitioner* for February, 1885, Dr. C. P. McNab reports having been called to attend a woman, aged 32, about one month after the birth of a child, who complained greatly of severe supra-orbital neuralgia. The process of involution of the uterus had well advanced, and the lochia had entirely disappeared. The pain was relieved by the hypodermic use of morphia, and thirty drops of the fluid extract of Jamaica Dogwood were directed to be taken every hour, should the pain recur, until relief was obtained. As her neuralgia returned in the same evening, the remedy was used as prescribed for four hours, with the effect of relieving the pain altogether. A slight hæmorrhage from the uterus made its appearance, which was attributed at first to the regular catamenial flow, the patient being unusually plethoric, and having menstruated regularly while nursing her last child. She was directed to continue the use of the remedy should the pain return. The next day, severe pain returning in the right orbit, the remedy was again administered and thirty minims repeated in an hour. The pain was then again, for the second time, relieved, but the hæmorrhage was increased to an alarming extent. Fluid extract of ergot was then administered, and controlled the hæmorrhage. Subsequently the Jamaica dogwood and the fluid extract of ergot were combined, and were administered subsequent to this as before for the relief of neuralgia, in each instance successfully and with no further trouble as regards the production of hæmorrhage. Dr. McNab points out that, although this remedy is most successful in curing neuralgia of the fifth pair of nerves, it must be administered with caution in all cases where uterine hæmorrhage exists, or where from surrounding circumstances it might be anticipated.

VALOID OF COCA.

The introduction of a new and reliable preparation of coca will be hailed with satisfaction. The valoid is made from the fresh leaves of the coca plant, each drachm representing that weight of the crude drug, including the whole of the alkaloidal and other principles. It has been extensively employed of late, and curiously enough, is found to exert a double physiological action. In small doses it acts as a sedative, promoting sleep, whilst in larger quantities, such as three or four drachms, it stimulates the nervous system, and induces an increased capacity for mental exertion. It has been used with much success in sleeplessness arising from overwork or worry and anxiety, and also in the treatment of impotence, spermatorrhœa, and a number of allied diseases. It has no toxic action.—*Lancet*, Jan. 3, 1885.

Reviews.

The Story of a Great Delusion.—In a series of matter-of-fact chapters, by Wm. White. London: E. W. Allen. 1885.

We are not troubled so much as our British cousins by anti-vaccination and anti-vaccinationists. With us—thanks to the absence of compulsory legislation on the subject—it has not yet attained to the dignity of a religion. If we do not desire vaccination, we leave it alone, for ourselves and our children, with the result, that vaccination is as generally believed in and practiced as ever; while over the water, a non-believer, a non-participator, is arrested and fined—and repeatedly fined until he becomes a fanatic and then a martyr, and his belief, or unbelief, a creed for which he may reputably and even gloriously suffer.

The author of this "history" has been evidently a close student of Jennerian and vaccination literature. The works of Jenner himself are not easily accessible, but there is no reason to question the fairness of his citations, which are many and extensive. From his deductions we imagine almost all will dissent.

The argument used by the author is practically thus: Jenner did not discover vaccination, but found it already a matter of belief in a limited way, and his discovery as at first claimed by him and really believed in through life was of the transmission to cows of the disease from the horse, forming a bovine disease similar in appearance, but different in reality, to that usually called cow-pox. This transmitted disease, or as the author has it "horse —— cow-pox," and this alone gave protection, in Jenner's opinion, from variola.

This belief of Jenner's was also suppressed by him when found unpopular, and he received his pecuniary award from the British government, for his discovery of the virtues of cow-pox without any dispute on his part as to what particular cow-pox he used.

Secondly, the discovery was valueless any-

way, because it does not prevent variola. This the author attempts to prove by a review of the various changes in the mode of the operation since its first discovery. He shows how from one successful injection being considered so complete a protection that, in the language of Jenner, "the human frame when once it has felt the influence of genuine cow-pox, is never afterwards, at any period of its existence assailable by small-pox;" re-vaccination, repeated vaccination, many simultaneous insertions, vaccinization, annual vaccination,—have all one after another been advocated as the only way for security; and finally, he endeavors to show by the testimony of its strongest advocates, that, done in any and every way, it is a failure, and that even if not a failure in itself, it has been totally so, as far as reducing the general mortality goes. Scarlatina, measles and whooping-cough having increased and fed upon the population saved by vaccination, if they were saved. The author shows an astonishing want of care in his eagerness to prove the ultimate worthlesness of the operation, virtually admitting its immediate power in protecting from variola.

The view that small-pox has been declining in force since Jenner's day, simply from natural causes, is one not likely to be enthusiastically received by reason of the argument advanced in this history. Mr. White believes it to have become milder, just as scarlatina has become more severe. If in the time of Sydenham scarlatina was a disease of no gravity, why in our time should not small-pox be of no gravity? Elsewhere he has shown how measles and whooping cough, as well as scarlatina, have become more malignant, but has variola become milder among the unvaccinated? And have common sense, improved morals and knowledge of hygiene succeeded for some occult reason in diminishing the mortality of variola, while among all the other zymotic diseases, according to the author's statistics, not one except variola has become milder, and it the only one for which we claim to possess a preventive? Of five houses in flames four burn up, while the fire is stayed at once in the fifth as soon as a stream of water is turned on; but our author would say the fire went out, not alone because it was deluged with water, but it went out, as the others did not, by the action of natural laws.

No doubt the cessation of inoculation, by diminishing the foci of the disease, played a considerable part in reducing the prevalence of small-pox, since many years elapsed before the population was so thoroughly vaccinated as to produce that result; but wherever the author turns for arguments he encounters direct or indirect proof of the value of this operation. Thus, in his account of the epidemic in Norwich, in 1819, he shows how of the 530 dying, 520 were children under 10 years of age, and he also adduces other proof that at that day small-pox was essentially a disease of children. Now if so, what other disease of childhood can we find which in the century past has left its proper victims comparatively alone, and attacked adults, a very powerful, if indirect, proof of the power of vaccination; especially since the author expends much effort in proving that susceptibility to small-pox diminishes naturally as age increases. The disease then has abandoned the extremely susceptible, and attacks now the extremely insusceptible, not because the former have been protected by vaccination, but from the action of natural laws.

The large number of vaccinated individuals whose cases appear as victims of small-pox, is considered as proving the failure of vaccination, yet no attempt is made to discover the number who escape the disease by being protected. Statistics on this head are extremely difficult of collection, yet in every one's experience they occur as a matter of course. We even expect confidently, on the advent of small-pox in a family, that the youthful, vaccinated members will escape, very much in proportion to the time which has elapsed since their protection.

Any one wishing to study the arguments of the anti-vaccinationists will find in Mr. White's book enough material. All the literature on this subject seems to have been accumulated, or malassimilated by him, and he quotes very freely. The book is nicely bound, clearly printed, and well indexed. It is very readable, although perhaps at times the language is too partisan, somewhat undignified and suited in style rather to the requirements of the anti-vaccination lecturer. Into the question of the danger of the operation, the author enters vigorously, as might be supposed, and makes many telling points. We are willing, however, to admit that there is a small percentage of mortality. But Mr. White considers the medical world as leagued together in one vast, secret effort to suppress all mention of its perils, and to be blind to its sequelæ. He shows us Jenner, calling annual vaccination dangerous and uncertain, and regarding none as well-vaccinated who did not exhibit erysipelatous symptoms,

swollen and suppurating glands, and prolonged ulceration. Vaccinal syphilis, too, affords him a delightful field, and the dangers of transmitting bovine disease are in his hands by no means made light of. But the book should be read. If vaccination is all we think it to be, it can stand all the arguments advanced here against it. It may perhaps have its vulnerable points, but if the gain outweighs the loss, we are content to go on vaccinating and being vaccinated, whoever discovered it, even if its mortality be one in a million, and and our risk of syphilis and bovine tubercle statistically calculable. It will take more than Mr. White's argument to convince us that it leaves behind it so many impaired constitutions, or in fact that the vaccine pustule is a centre for the dissemination of the bacilli and bacteria from which spring all the ills of the flesh.

A HANDBOOK OF PATHOLOGICAL ANATOMY AND HISTOLOGY, with an introductory section on post-mortem examinations and the method of preserving and examining diseased tissue, by Francis Delafield, M. D., and T. Mitchell Prudden, M. D. New York: Wm. Wood & Co. 1885.

The authors of the above volume make the statement in their preface that: " The point of view of the work, therefore, is that of the physician who wishes to find out what are the lesions of the diseases which he is in the habit of seeing, rather than that of the pure pathologist." Reviewing their labor upon the ground made in the above statement, we can not too highly congratulate our authors upon a most successful accomplishment of their task, and it is only upon such ground that their work is to be considered. For the more minute detail of pathological histology, and for the theories in pathogenesis, other works more specially devoted to these subjects may be consulted; but for the student, and general practitioner who has not paid particular attention to the study of pathology, our authors have certainly produced a work which physicians cannot fail to understand, and from which they must obtain valuable information by its perusal. A word in regard to the bibliography, which is given throughout the book under the various chapters, it is, scarcely without exception, entirely taken from the German writers; there is almost an entire ignoring of any English, French or American author. That the Germans have done, and are doing, much in this department of medicine we are well aware, but we should also like to see the labors of others equally recognized. Pathological investigation owes much to the German schools, indeed, our methods of study, as undertaken at the present day, may be said to be almost exclusively German in character; yet we think other nations have added something to our knowledge and we should justly give them credit.

Part first the authors have devoted exclusively to "the method of making post-mortem examinations, and of preserving diseased tissues." This department of pathological anatomy is one often neglected or very carelessly performed. The instruction given in our medical colleges upon this subject is frequently very meagre, and possibly entirely omitted, so that many young physicians, who have not had the advantages of a hospital experience, have never witnessed the steps of a properly conducted post-mortem examination, until they are themselves called upon to make one. That such instruction is necessary must be admitted, and any aid in this direction we shall cordially receive. Our authors unquestionably have upon this important subject given us much assistance; their descriptions are clear and concise, the information is just what is needed by a beginner, and, indeed, if their methods are fully followed, even the most practiced will find he may learn much.

The subject of the preserving of diseased tissues and organs has received careful attention, but not more than its importance calls for. How often have we seen a most valuable pathological specimen lost on account of want of knowledge of the proper care which is necessary for its proper preservation. The study of the pathological changes which take place in the histological structure of a tissue or organ can only be determined by a microscopical examination of the specimens, and, therefore, it is absolutely essential that no putrid changes have occurred. The wrapping of the tissue in waxed paper or any other material, as is so frequently done, is not enough; it must immediately be immersed in a preserving solution, and it is with much pleasure we find that such full and excellent directions are given by the writers.

The practical part of the microscopical examination is not overlooked in this section and we are given all the necessary instructions, in order to prepare specimens for microscopical study. The decalcifying of dense tissues, the hardening of soft tissues, the embedding, section-cutting and staining the same, are all to be found, and in all our experience would lead us to concur.

Part second includes a section treating of

"Morbid changes in the circulation of the blood," under which are considered, hyperæmia and anæmia, hæmorrhage and transudation, thrombosis and embolism. While admitting that the organization of a thrombosis is generally due to the endothelial cells of the blood-vessels, the writers think it possible that the white blood-cells of the thrombus may contribute somewhat to the formation of the new tissue. This view seems to us a correct one, since knowing the vital property which is possessed by the white blood-cell, it is very probable that its participation in the process of organization is more likely to be an active than a negative one.

Section second treats on "changes in the composition of the blood." This chapter is quite elementary and not so satisfactory as other portions of the book. Blood-counting has recently attracted much attention in several pathological conditions, and may become a valuable means of diagnosis; therefore, a familiarity with the methods of performing it, and a knowledge of the results of investigations, is desirable.

"The degenerative changes in the tissues." This section is scarcely more than an enumeration of the degenerations; we think it much too brief. A proper understanding of the retrograde metamorphoses, undergone by the various tissues, is absolutely necessary in order to fully comprehend many pathological changes, and, therefore, a more detailed description of the processes should have been given.

The section on "parasites" includes both the animal and vegetable. Of the former only the more important forms are mentioned, with a brief description of each, while the latter, the vegetable, and more especially the bacteria, have received the attention their importance demands. In regard to the relation which these organisms, bacteria, have to the etiology of certain diseases, we can give the views of the authors best by quoting the following paragraph from this section of their book: "The complete demonstration which certainty requires has as yet been furnished in but a very small number of cases. In a considerable number of other cases, although the complete cycle of proof has not yet been established, enough has been done in the way of study and experimentation to render it altogether probable that certain forms of bacteria are the cause of the diseases." This section concludes with a résumé of the methods of studying bacteria; the process of staining them in fluids and tissues; their artificial cultivation, and the preparation and use of culture substances. In concluding their remarks upon this subject, our authors say: "It is only by an extended preliminary training in the cultivation of some of the more characteristic and easy recognizable forms, under a variety of conditions, in a perfectly pure state, through a series of generations, that one can be assured of his capacity to carry on researches in this most difficult and intricate field." If this advice had been more faithfully observed, we do not think so much confusion would exist, as does now, concerning the bacteria question. It has been owing to the blunders and carelessness of investigators that such chaos has been occasioned and advance prevented.

The section on inflammation is particularly good, and should not only be carefully read, but it calls for a close study of every page. The view, that there are not only different kinds of inflammation, but also different tissues which are liable to be inflamed, as well as different causes which may determine the inflammatory process, thus occasioning lesions which vary in their character, their degree and their anatomy, is one which cannot be too strongly insisted upon, as it explains many otherwise unexplainable phenomena of this process.

The lesions of inflammation, and the phenomena which accompany the process, are very clearly and fully described. A separate consideration of the process as it occurs in connective tissues, mucous membranes and in the viscera, is a convenient one, and is adopted by the writers. The now almost generally accepted opinion of an active cellular participation in the inflammatory process, is believed by the authors to be established. Both the white blood-cells and the cells of the tissue are active in a varying degree; the predominance of one or the other gives a certain character to the particular inflammation. Thus, in connective tissue, they say we have the following varieties: 1. Cellular inflammation. 2. Inflammation with the production of serum, fibrin and pus. 3. Abscesses. 4. Inflammation with the production of serum, fibrin, pus and new connective tissue. 5. The formation of granulative tissue. 6. The formation of new connective tissue. 7. Tubercular inflammation. 8. Syphilitic inflammation. Mucous membranes may be affected by catarrhal, croupous, purulent, tubercular and syphilitic inflammation. And, finally, the visceral inflammations are parenchymatous, interstitial and diffuse inflamma-

tions. These different forms of inflammation, although briefly described, have the merit of being well explained.

The section which treats of tumors offers nothing new; it is well written, and contains all the information of any importance which relates to this interesting division of pathology. In the question as to the etiology of these new formations, the authors have nothing to suggest; while they believe mechanical influences and heredity are important causative factors, yet to both, they think, too much importance has been attributed in former times. For them the most plausible hypothesis, and one which most satisfactorily accounts for the occurrence and character of many tumors, is that of Cohnheim, the embryonal origin of tissues. This hypothesis, which has for its foundation faulty embryonal development, has not met with general acceptance among pathologists; indeed, most writers have not expressed a favorable opinion of it. That it is an attractive, and, perhaps, in a measure, a satisfactory hypothesis for the etiology of tumors, we admit, but that it is plausible or demonstrable, we cannot concede

The classification of tumors, as given by our authors, is a very excellent one, and based upon the physiological types of tissues. Cysts are properly not included in the classification. Lymphomata are also excluded; they are considered hyperplasias, sometimes inflammatory in character and sometimes not. The infective granulomata, which accompany tuberculosis, leprosy, syphilis, lupus, glanders and actino-mycosis are also omitted. These are thought to be more closely allied to inflammatory new formations rather than to true tissues, "and as our knowledge regarding them increases, they seem more and more to depend upon the irritation caused by the presence of vegetable parasites."

The histological description of special forms of tumors, their degenerations, their locations and their benign or malignant nature are all fully discussed in this section.

Part third, "morbid anatomy of organs," includes the various pathological lesions which are liable to occur in the nervous system, respiratory system, vascular system, digestive system, genito-urinary organs, osseous system, and the muscular system. This portion of the book is quite abreast of the present limit of our knowledge upon these subjects, and occasionally we have presented to us some innovation which is not in accord with the generally accepted views. Thus we are told, "the terms croupous and catarrhal should not be applied to designate any of the inflammations of the lung-tissue." But our authors make an anatomical division of pneumonia into five varieties. "The intra-lobular pneumonia, interstitial pneumonia, bronchopneumonia, syphilitic pneumonia, and tubercular pneumonia. These terms, croupous and catarrhal, are also omitted in describing the lesions of the kidneys The inflammatory changes of these organs they have classed as follows: Acute and chronic parenchymatous nephritis; acute and chronic diffused nephritis; acute and chronic interstitial nephritis. We can see no objection to the omitting of the words croupous and catarrhal in the inflammatory lesions of the lungs and kidneys, and think it a decided improvement in the nomenclature.

Part Fourth considers the lesions found in the general diseases, in poisoning and in violent deaths. The first is typhoid fever, and quite an exhaustive description is given of the various pathological changes which are liable to be met with in this affection. The presence of a species of bacillus in the body in typhoid fever, they say, has been established in a considerable proportion of cases, and is thought to be very suggestive of the causative agency in this disease; this, however, they do not consider as yet proven.

We turn with some unusual interest to the section on tuberculosis, in order to see the views of the authors upon the question of the day—the bacillus tuberculosis. Their opinion may be learned from the following quotation: "We may then assume that some persons have a peculiar constitutional vice or diathesis—the tubercular diathesis; that this diathesis is inherited or acquired; that the possessors of the diathesis, in order to develop tuberculosis, must be subjected to some exciting cause; that such exciting causes are infection by the tubercle bacillus, exposure to cold and wet, irritants or injuries." It is thus seen that they are not believers in Koch's theory of the *specific* nature of the bacillus tuberculosis, but that other irritants may occasion the affection.

The sections containing an account of the lesions found in poisoning and in violent deaths, are valuable additions to a work on pathological anatomy, and our authors have given a clear and concise account of the appearances found in these cases.

We cannot conclude our remarks without according to the authors the praise due them for the excellent drawings which illustrate

their work. Throughout the book are found one hundred and forty-six illustrations, all original and all drawn by the authors from actual specimens. From our experience in examining microscopical specimens, we cannot too highly speak of the truthful reproduction in these drawings of the appearances seen in specimens themselves, and therefore they give additional value to the book.

J. H. C. S.

THE STUDENT'S MANUAL OF HISTOLOGY.—By Charles H. Stowell, M. D., F. R. M. S., Professor of Histology and Microscopy, and in Charge of the Histological Laboratory of the University of Michigan. Illustrated by 178 engravings. Third edition. 8vo. Pp. 368.

Ann Arbor, Mich. 1884.

Three editions of any text-book within as many years, is certainly as flattering assurance of popularity as an author could anticipate. Such is the compliment paid Dr. Stowell by the appearance of the present edition of his Manual of Histology.

When compared with the pioneer volume, marked changes for the better are noticed in every chapter; in its present form, the text presenting to the student a concise and accurate account of the histology of to-day.

The *ideal* hand-book of this subject must be characterized by the full development of three features—excellent illustrations; concise and accurate text; and full and reliable directions for carrying out particular work according to the best and most modern methods. In the first of these features lie the weakest points of the volume before us. While a few of the later original drawings are satisfactory, many are mere outline sketches, nowise improved by the meagre amount of skill expended in their reproduction in the block. Of the large number of figures from other sources the majority are *very* familiar, but few have not suffered in this revival. Some had better be left to oblivion—the sooner the better for the student. The well-known, and extensively copied, figure of Kölliker of the Malpighian corpuscles of the spleen invariably conveys an erroneous impression; and in looking through the book we see many which are open to the same criticism. Thus, were such wild and frenzied bone lacunæ and canaliculi ever encountered, as are seen in fig. 44. Is not the picture of fig. 45 nearer nature?

The suppiementary chapters regarding tumors and starches add practical value to the book. That on starch is especially to be commended to every student of histology—had the study of starch, in its various forms, been part of the professional education of some of our investigators, there would be fewer accounts describing newly-discovered substances in the blood in various diseases, the faithful figures of the accompaning plates often bearing a suspiciously strong resemblance to partially disintegrated starch-grains.

In conclusion, we have but to congratulate Dr. Stowell on the excellence of the manual bearing his name, and venture to express the hope that, with the able assistance of his co-laborer, he will gradually replace the old well worn figures with original drawings—then shall we have an American manual of histology worthy the distinction.

ONE HUNDRED YEARS OF PUBLISHING.—1785—1885. Philadelphia, Lea Brothers & Co, 1885.

The title page of this little book is a brief record of a very remarkable business career stretching through a century, and therefore almost through the history of our nation. It is not only unusual that a business house should preserve in this country so long a career unbroken by adversity and untarnished by impurity, but it would be remarkable in any country, that the successive generations of a firm should possess so much of literary and scientific renown, and so much of business talent and renown.

Mr. Mathew Carey, the founder of the house was born in 1750 and early evinced the peculiar union of business and literary talent. He seems also to have been a good deal of a fire-eater, the one quality which he appears not to have transmitted to his descendants. He, alone, of all had the honor of spending months in bed on account of the results of a duel.

As a history of hereditary talent this book is interesting to the student of mankind, and we hope that the Messrs. Lea have sent a copy to Mr. Galton, of London, to adorn his next chapter on heredity. We trust that the bi-centennial of this business house may find a record as remarkable as the present one; although few of us can have hope of seeing such a consummation.

Correspondence.

PALATABLE PRESCRIBING.

H. C. WOOD, M. D.:

DEAR DOCTOR—In common with many in the profession, I feel the need of some new methods in therapeutics. I refer not so

much to more efficient, as to *pleasanter* methods of treatment.

What we want to know—about the treatment of bronchitis, for instance—is, not whether a detestable emetic of antimony is preferable to one of ipecac; or the nauseating, acrid senega is a better expectorant than the horribly repulsive muriate of ammonia or the sickening squills; or the comparative merits of such palatal abominations as the balsam of copaiba and oil of eucalyptus; or when to drench a confiding coughing patient with a six-ounce solution of citrate of potassium in the twenty-four hours; but what are the remedies that will cure the disease, and the methods of preparation and administration that will render them sufficiently palatable to be taken with reasonable comfort, so as not to disgust and drive away our patients.

The demand of the hour is for an advance in the method of *palatable prescribing;* and there is no one in this country now in a position to accomplish as much in the desired direction as the editor of THE THERAPEUTIC GAZETTE. Will you respond to this demand, and contribute the efficient aid of your brain and pen toward this urgently-needed reform, and thus do more to benefit the profession and popularize your journal than will any amount of really learned disquisition on emetics and expectorants, purgatives and cholagogues, huge in dose and disgusting to the taste?

I know not how it is in Philadelphia, but if the physicians of Pittsburgh were to prescribe for cases of bronchitis, etc., in private practice as indicated in your editorial, I imagine that their disgusted patients would not a second time give them occasion to ponder as to the superiority of oil of eucalyptus over that of copaiba, nor as to the best investment for any superfluous ducats. The ducats would go to the vendor of pellets and powders.

I hope you will not consider me impertinent or presuming in thus addressing you, but only as deeply interested in what seems to me to be a very important subject.

Respectfully yours, etc.,

E. S. RIGGS, M. D.

ALLEGHENY, PA., Feb. 11, 1885.

EFFECTS OF AN OVERDOSE OF HYOSCYAMUS.

To the Editors of the THERAPEUTIC GAZETTE.

Gentlemen: Dr. Wood's article in the January number of the GAZETTE on the effects of hyoscine reminds me of a case of overdose of solid ext. of hyoscyamus which occurred to me very early in my career of practice.

Mine was not an experiment, but the remedy was given in a case where opium and its preparations were contra-indicated.

The subject was a man of 54 years of age, of the nervous sanguine temperament, very anæmic and much emaciated. He was a survivor of the Mexican war and in the last stage of that terrible diarrhœa which was far more fatal than Mexican bullets, even the copper ones. There was a degree of anasarca, palpitation, great restlessness of the lower extremities principally, with roaring in the ears. Opium being contra-indicated, about three grains of solid extract of hyoscyamus were divided into three pills, one to be given every two hours. By the nurses changing, the mistake was made by which *all three* were given inside of two hours.

The dose of hyoscyamus was given at 9 P. M., January 6th, 1859. The restlessness of the patient was increased, the pulse quickened, the former symptoms all becoming aggravated. Nausea and vomiting were among the first effects of the dose. The pupils became fully dilated and diplopia, or double vision, came on.

The patient declared that my face was "dreadfully pock-marked," and that he saw reddish green spots on everything.

There was during this time, that is up to 2 o'clock A. M., subsultus tendinum of the upper extremities and cramps of the lower ones. He kept up a continual reaching out of the arms as if to grasp something a little beyond his reach. Declared the logs of wood upon the fire were covered with ants.

There was excessive thirst and the usual dryness of the fauces, and on attempting to swallow there was constriction or spasm of the pharyngeal muscles.

The difficulty of deglutition almost precluded the administration of any internal antidotes.

Walking the patient, by supporting him by the arms, quieted the spasms of the lower limbs. All this time he labored under delusions. He saw old friends and relatives, both living and dead, and conversed with them. His mind could be brought back to the present and the events transpiring around him, but only for a few moments. The mind would seem to grasp the idea or comprehend the object, and he would commence to converse as if he had grasped a passing train of thought. But before the first sentence was

complete, his mind would lose its hold of the image and his words would become a senseless jumble.

Another subjective symptom which I came very near not mentioning; that is an intense desire to urinate, making many attempts, some of them apparently involuntary, but mostly unsuccessful. I think that the drug among other symptoms induced strangury. What urine he did pass was scanty and of a deep, beery color.

The quantity given can hardly be considered an overdose, as I find the dose of the solid extract is from one-half to one grain.

That particular preparation was the most powerful I have ever found, and was prepared by evaporating the fluid extract to the solid extract.

D. W. FLORA, M. D.

NEWAYGO, MICH., Feb. 25, 1885.

INTRA-UTERINE MEDICATION.

To the Editors of the THERAPEUTIC GAZETTE.

Gentlemen—I saw in the January number of the GAZETTE an article by Dr. L. Atthill on the treatment of intra-uterine diseases, a subject in which I am much interested. Having for nearly twenty years been making a specialty of diseases of women, my experience may be to some younger men worth the space it occupies in the GAZETTE.

In my early practice I was often ashamed and mortified at the results which followed even warm water injections into the womb; some strong women would faint, others would be thrown into great nervous excitement, while with others no such conditions would be present. The former untoward conditions occurred much more frequently where I used medicine by injection, and my convictions are that the very delicate and sensitive internal membranes and walls of the womb should never be subjected to many of the remedies which writers on the treatment of intra-uterine ailments recommend.

Indeed, so fearful have I become of the effects of injections into the womb of any medicine, that I have almost entirely abandoned them, and instead use a probe and layer of cotton dipped into a solution of watery extract of hydrastis, or simple solution of roots of hydrastis canadensis; or weak solution of carbolic acid or carbolized oil. This treatment I employ only once in about eight or ten days, and if there are ulcers on the os I often use a solution of iodoform, composed of twenty grains of the iodoform to one ounce of sulphuric ether, this to be used to the external os with a camel's hair brush once in four or six days, and alternate with a solution of boracic acid fifteen grains to the ounce of water, with twenty drops of rose water added.

This much abused and very necessary organ of the human female, called the womb, is the subject of so many disquisitions by able medical gentlemen that one sometimes thinks it should have been iron-clad to withstand all the applications of so-called medication the various gynecologists have from time to time subjected it to.

I can only say that I am having excellent success since I have abandoned nearly all injections into the womb, and have operated on its internal structure by a probe and brush. This, with proper constitutional medication, will go as far, or farther, in curing diseases of the membranes of the womb than all others I have ever tried; of course surgical cases may and do need different modes of management.

One thing I am really satisfied of, and that is, that more harm than good will invariably result from injections into the womb of medicines that are very corrosive or severe.

JAMES M. HOLE, M. D.

SALEM, OHIO.

MURIATE OF AMMONIUM IN FACIAL NEURALGIA.

To the Editors of the THERAPEUTIC GAZETTE.

GENTLEMEN:—In your January issue of the THERAPEUTIC GAZETTE I see that it is stated by Dr. J. T. Stewart, of Peoria, Ill., that in facial neuralgia "one hypodermic injection of ergot is worth all the gelsemium in the universe." This is undoubtedly true, and is fully corroborated by my own observation. But then we have another remedy that is vastly superior to both ergot and gelsemium, viz., muriate of ammonium. I have employed it a number of years and regard it as a specific in facial neuralgia.

I give it in ʒss doses every half hour, if necessary, until three or four doses have been taken—it is seldom that more that two doses are required to subdue the most aggravated case, and often a single dose suffices.

I am in the habit of continuing the remedy in smaller doses, say ten grains three or four times a day for a day or two, after the neuralgia subsides. I give it in an ounce of water. It is also a valuable remedy in toothache, a single dose of half a drachm often allaying the pain in a few minutes.

O. G. DARLING, M. D.

BROOKLYN, N. Y., Feb. 18, 1885.

Notes and Queries.

SALICYLIC PAPER.

This extremely useful paper, according to the *British and Colonial Druggist*, Dec. 24, 1884, may be thus prepared:

Any white absorbent paper is suitable for the purpose, but the particular kind to be used must depend somewhat on the special object for which it is intended. Thus, for covering honey, preserves, milk, cream, or similar articles, ordinary English white filter —or blotting—paper answers well; but for butter, fresh meat in small pieces, or delicate fruit and vegetables a less "tender" paper should be selected; whilst, if required for wrapping up large joints of meat and the coarser fruits, etc., a still more substantial material must be chosen, such, for instance, as a stout, unpressed, "printing" or soft white "sugar paper." It is almost essential that the paper employed should be unglazed or practically without sizing of any kind.

Any convenient quantity of salicylic acid (Von Heyden's No. 1) is taken and divided into two equal parts; one of these is then dissolved in the following solution previously warmed:

Sulphate of sodium, 30 grains.
Biborate of sodium (borax), 50 grains.
Water, 1 fluid ounce.

The solution should be poured hot upon the acid with constant stirring, not much more of the liquid being used than is needed to effect a complete solution.

The other half of the acid it meanwhile to be digested in a little warm glycerin diluted to the density of about 1.100 or 1.150, one-third more glycerin than has been found requisite to effect the solution of the acid being subsequently added. Both solutions may then be mixed together, water being cautiously added, until the strength is equal to from 3 percent. of salicylic acid for the thicker, to 5 percent. for the thinner papers. Should any crystallization or precipitation of the acid occur, glycerin must be added by degrees until it is again taken up and the liquid becomes perfectly clear.

The papers to be impregnated should be immersed one by one in a large shallow dish or pan about two-thirds filled with the solution somewhat in the same way that paper is "salted" for photographic purposes. If the solution be used rather warm, say about 140° or 150° F., four or five minutes soaking will be sufficient; but for the thickest and least pervious paper, a somewhat longer period is advisable. If the liquid be used cold, fifteen or twenty minutes is not too much time to allow for maceration before taking out the sheets, draining them, and hanging them up to dry, which latter operation is preferably completed in the sunshine, before a fire, or in a cool oven.

These salicylic papers may be kept in a cool dry place, pressed flat between the leaves of a book or portfolio, or rolled up tightly for any length of time without deterioration, or loss of preservative strength.

A large number of articles of food and drink and of animal and vegetable substances, ordinarily liable to fermentive or putrefactive change, may be prevented from decomposing for some time by the judicious use of salicylic paper, which we have known to keep free from "mold" for several months, some badly-prepared ext. taraxacum which, without it, invariably showed symptoms of the development of *Penicillium* within a few days.

POISONING BY OIL OF TANSY.

DR. H. SPEIER (*Northwestern Lancet*, Feb. 1, 1885), reports the following case of an unmarried woman, aged 25, whom he found in violent convulsions and unconscious, as the result of an overdose of oil of tansy. She had very violent clonic convulsions, requiring great force to restrain her; was entirely unconscious; cold perspiration on forehead and face; some foam at mouth; pulse rapid, feeble and thready. In the intervals of spasms she lay in a stupor from which she could only be aroused with difficulty for a few moments, without seeming to recognize anybody or giving any coherent replies. A strong emetic had a good effect; convulsions became shorter, less severe, pulse better, until finally she fell into a sound sleep. Next day her mind was clear, except that she knew nothing of the occurrences of the night. Severe frontal headache, aching and tired feeling in limbs, which, did not pass off until second day. A good dose of castor oil completed the medical treatment. Dr. Speier could not ascertain the exact dose she had taken. She said, only five drops at bedtime, but this could hardly have produced such serious results in such a strong, robust woman. The druggist sold her half an ounce in all, of which she took two drops several times a day. Two drachms were taken within four days. No diuresis was caused by the drug.

GLAUCOMA PRODUCED BY HOMATROPINE.

The expectation that homatropine unlike atropine would not cause an undue ocular tension, and hence be applicable where atropine is contra-indicated, has not been realized. A man of fifty-eight years of age had one drop of a one-per-cent. solution of homatropine dropped into the right eye for diagnostic purposes. Soon afterward, pains in the right half of the forehead, disturbance of vision, sensations of fainting, and after twenty-six hours glaucoma of moderate intensity appeared: Cornea turbid, pupil dilated and fixed. An instillation of eserine caused all of the symptoms to disappear within an hour. —*Wiener Med. Woch.*, 52, 1884.

WHO OWNS A PRESCRIPTION?

In our last issue we gave one phase of the controversy as to the ownership of a prescription. The *Boston Medical and Surgical Journal* shows that the answer to the question as to ownership is not so easily reached as might be supposed. Thus, in paying his physician's fee, has the patient bought and paid for his prescription? If so, he owns it. The obligation of a druggist not to refill a prescription if expressly forbidden to do so by the prescriber, is probably generally recognized. But if the patient owns the prescription he has a right to make or to obtain a copy of it, and this copy presented to another druggist will procure the medicine at any time and for any number of times. Hence, in order to prevent the refilling of a prescription which may lead to the injury of both patient and practitioner, it is necessary to resort to the somewhat arbitrary proceeding, as it certainly seems, of forbidding the druggist to give a copy of any recipe. Whether such a prohibition is likely to prevail against the druggist's interest in obliging a good customer, to say nothing of a patient's possible legal rights, is a question. The patient's endeavor to make a copy himself before taking the prescription to a druggist can only be thwarted by the physician's sending his recipe direct to the pharmacy and instructing his patient to call there for the medicine.

A NOVEL ANTIPYRETIC TREATMENT.

Dr. Stephan, of Ilsenberg, has proposed a novel method of reducing febrile temperature by the application of ice bags to the neck and supra-clavicular space, made so as to fit closely to this region. The great number of large superficial vessels in this locality of course renders the latter peculiarly eligible for this topical application. Stephan has treated several typhoid fever cases in this manner, and never had to deal with high temperature nor grave nervous symptoms. The simplicity of the treatment and ease of its application, ought to induce to a trial of Stephan's method. *Allg. Med. Central Zeitung*, 87, 1884.

A CURE FOR HICCOUGH.

A remedy, tested many times without a failure, is published in the *Popular Science Monthly*, which says that it can always be used by some one else upon a person who has "the hiccoughs," and generally by the sufferer himself. You say to your friend something like this: "See how close together you can hold the tips of your forefingers without touching. Now keep your elbows out free from your side. You can get your fingers closer than that. They are touching now. There—now hold them so. Steady!" By this time you can generally ask: "Now why don't you hiccough?" The involuntary tendency to breathe slowly and steadily when the attention is fixed on performing a delicate manipulation counteracts the convulsive action of the diaphragm.

AN IMPROVED ANTISEPTIC DRESSING.

An antiseptic gelatin bandage is prepared by Francis (*Boston Med. Journal*), by incorporating one-per-cent. corrosive sublimate in a hot solution of gelatin in glycerin. The wound to be dressed is covered with sublimate gauze, and this is then coated with the warmed gelatin solution. Strips of gauze having been dipped in the gelatin solution are placed upon the covering, and a substantial bandage is obtained.

We learn from official sources that the death of Dr. Gaillard will not interfere with the continuation of his valuable medical journal. It will be published by M. E. & E. W. Gaillard, assisted by an able corps of collaborators. We trust that the journal will prove as successful in the future as it has been in the past.